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THE

AMERICAN JOURNAL

OF THE MEDICAL SCIENCES

FOR JANUARY 1873.

ART. I.—*A Case in which a Large Bronchocele was removed, with Fatal Result.* By T. HOLMES, Surgeon to St. George's Hospital, and Professor of Surgery and Pathology to the Royal College of Surgeons, London.

I HAVE read with extreme interest the article on the removal of bronchocele, published in the *American Journal of the Medical Sciences* for January, 1871, by Dr. Greene, of Portland, Maine. It happens that I had been led to a conclusion similar to that of Dr. Greene as to the occasional justifiableness of such operations, and had had occasion to perform the operation before meeting with his excellent paper. My case, although its issue was fatal, was one which to my mind showed that such operations are not impracticable, and that recovery may be reasonably anticipated in a certain proportion of them. I think, therefore, that a short account of it may not prove unacceptable to the readers of the *American Journal*. If what I contribute to its pages has any value, I shall regard it as a very insignificant instalment of the large debt I owe for instruction received from that valuable periodical.

My case was as follows: An elderly married woman, æt. 65, was brought under my notice by my friend, Mr. Lynch, of Sudbury, Suffolk, at St. Leonard's Hospital, in that town. She had been the subject of enlargement of the thyroid body for more than forty years, and had consulted various medical men, who had told her (and very wisely) that an attempt at its removal would in all probability end fatally. The tumour, however, had continued slowly to increase; and some time before I saw her it had

burst, giving rise to an enormous discharge of fluid (estimated by her friends at half a pailful) followed of course by suppuration of the great cyst from which it was discharged. Under this suppuration and under the fetor which it occasioned, her powers were gradually sinking, and death sooner or later was inevitable. The annexed wood-cut represents as accurately as can be done without colour the patient's condition, being taken from a photograph which Mr. Lynch was so kind as to have taken. The only point it does not show is the extreme state of anæmia and emaciation in which the patient was. The tumour was of very large size, hanging down considerably below her waist. The tension of the parts so produced rendered it impossible to make out its inferior relations. It lay more to the right than the left side, but extended over as far as the left sterno-mastoid muscle. On the right side the innominate artery could be felt extending as high as the lower edge of the tumour, and giving off its two branches, the subclavian lying over the pedicle for some distance. The tumour was of very large size at

[1] I owe the following to the Rev. Mr. Smith, a clergyman and a student of medicine, who also assisted at the operation.

Susannah Pegge, age 65; married about forty-one years; had six children. Enlargement of the thyroid first perceived before the birth of the fifth child; when first noticed it was about the size of a walnut. The bronchocele continued, and about thirty years ago she was admitted into the Colchester Hospital, when the tumour was punctured, with no result but the loss of some blood and a little serum. She left the hospital against the wish of the surgeons, who wished to try further means. The growth reached a very large size (good-sized pumpkin) about eighteen years ago, and it had continued inert and chronic until the end of last year or beginning of this, when it assumed a more œdematous character and showed a fixed tendency to increase in bulk; it became more tense and painful almost daily, and by the first week in May was of immense girth. On the 5th of May (her sixty-fifth birthday) it broke and discharged an immense volume of a streaky and glairy fluid, tinged here and there with blood; it is computed that vessels equivalent to two pailfuls were filled in the evening and through the night of the fifth.

its base, quite as large in circumference as a man's arm. It was of course perfectly movable, but its immense size prevented our manipulating it freely enough to ascertain whether it could be at all separated from the trachea. However, there was not, nor ever had been, as far as we could learn, any dyspnœa or dysphagia; and this fact encouraged the hope that it had no very firm connection to the deep parts. Besides the great cyst which had burst, other smaller rounded masses, probably secondary cysts, could be felt; and in many places calcareous nodules existed. The veins covering the tumour were of very large size, but beyond the great vessels of the neck (which seemed unusually large) no arterial pulsation could be detected.

I was told that Sir Duncan Gibb had seen the patient and expressed an opinion that the removal of the tumour was practicable. With some hesitation I came to the same conclusion. At any rate I thought that the tumour might be removed, if not absolutely entire, yet sufficiently to prevent death from the suppuration of so large a cavity, which otherwise seemed inevitable. I offered, accordingly, to undertake the operation if the patient and her friends, after having the dangers of it fully explained to them, wished it to be done. Accordingly on June 19th I proceeded to the operation. My colleague, Mr. Pick, of St. George's Hospital, was so kind as to accompany me from London, and Mr. Lynch and Mr. Symmons, of Colchester, also assisted me, as well as the Rev. Mr. Smith.

I did not adopt the plan of operation proposed by Dr. Greene, of endeavouring to enucleate the tumour without regard to the hemorrhage so produced. In fact the enormous size of the mass rendered such a plan too dangerous, especially in her enfeebled state. The tumour was surrounded by appropriate incisions around its lower part; flaps were carefully dissected off it, sufficient to cover the vast surface which would be exposed; all large vessels that could be seen were divided between two ligatures, and any that spirted were tied at once, and in this way we got down to the base of the tumour. Having dissected the soft parts away from the base of the large cyst to a sufficient extent, I encircled the pedicle with the chain of an écraseur so as to check the hemorrhage, while with an amputating-knife I cut away the mass. This left behind a portion of the cyst. After the divided vessels had been secured, the écraseur was removed, and the remains of the cyst partly dissected off, and partly surrounded with ligatures. The operation lasted about an hour; the patient remained quiet under the influence of chloroform the whole time, and did not suffer at all from dyspnœa, except when an attempt was made to pass the chain of the écraseur fairly below the tumour, instead of around its lower end. This attempt completely closed the trachea and stopped the breathing entirely. It was this intimate connection between the deep part of the cyst and the windpipe which obliged us to leave a part of the cyst wall behind; but I carried double ligatures round every accessible part of it—partly to com-

mand the hemorrhage, and partly to insure the separation of all the secreting surface. The patient lost very little blood, and her pulse was as good after the operation as before. She passed a comfortable night after the operation, and was able without difficulty to swallow milk and other liquids. Early next morning hemorrhage set in from the upper part of the wound, and before it could be stopped a considerable quantity of blood was lost; in the afternoon erysipelatous redness began to appear over the throat, the pulse became rapidly weaker, unconsciousness supervened, and she died on the following morning, having survived the operation about thirty-nine hours. No post-mortem examination was made.

The tumour, when removed, weighed a little over seven pounds. It consisted almost entirely of the single large cyst, the walls of which were of considerable thickness, containing here and there nodules of calcareous matter, and a few small secondary cysts.

The result of this operation was so far unsatisfactory that it unquestionably hastened the patient's death. The same thing, however, may be said about the great majority of surgical operations which end fatally—and of these many are undertaken with a full knowledge on the part of the surgeon that the chance of recovery is very small. This is not considered to be a valid argument against the operation in other cases, nor can I see why it should be so considered in the case of a bronchocele—provided that the danger to the patient's life from the disease is sufficient to justify the admitted risks of the operation, and provided that no less dangerous method of treating the disease efficiently can be suggested. In the case before us there was no doubt in the mind of any of those who saw the patient, that she was slowly, but surely, succumbing to the effects of the wasting suppuration; while her life was rendered a burden to her while it lasted, by the fetor of the tumour, and the other inconveniences it produced. And, as no other course of treatment could be rationally proposed (for the enormous size of the mass put it far beyond the province of setons or injections), the question was limited to the feasibility of the operation. On this head I had little previous experience to guide me. Cases are related, indeed, by Mr. Holmes Coote[1] and by Mr. South,[2] in which such operations have been performed by Hedenus, Green (of St. Thomas's Hospital) and others; but both these authors dismiss the subject—Mr. Coote with the remark that "these proceedings are scarcely considered admissible in modern surgery," while Mr. South contents himself with translating Chelius's opinion that "the extirpation of the bronchocele is to be decidedly rejected as dangerous, and almost entirely to be forbidden." Dr. Greene's paper had not fallen under my notice.

There can be no doubt, I think, that the opinions above quoted are

[1] System of Surgery, edited by Holmes, 2d ed., vol. v. p. 287.
[2] South's Chelius, vol. ii. p. 664.

correct, as far as they go, that the great majority of cases of bronchocele are not proper subjects for extirpation, and that the advice which my patient received, before the tumour had burst, was sound. But the case was altered when suppuration had been established in the whole of this great cavity. And now, the experience, such as it was known to me, of similar operations, as well as the examination of the tumour before me, seemed to show that there was no insuperable anatomical difficulty involved in the extirpation even of so large a thyroid tumour as the one before us. It was evidently easy to avoid the main arteries of the neck, and, although the thyroid and other veins must be greatly enlarged, there could be no difficulty in securing them with so large a wound as must be made. It was impossible, it is true, to know beforehand what the connection between the tumour and trachea might be; but I reasoned, that, if we succeeded in extirpating or destroying the whole of the suppurating cyst-membrane, the rest of the thyroid body might be safely left behind. I did not, therefore, anticipate any insuperable anatomical difficulties; and, however formidable the operation might be, in consequence of the great size of the wound, and the extent to which the dissection must be pursued in the deep parts of the neck, still it seemed her only chance, and was to my mind as justifiable as an amputation at the hip-joint would have been in the same patient—and probably not more dangerous. As, therefore, for a similar motive, no surgeon would have hesitated to perform the one operation, I could not see why the other should be contra-indicated. Nor should I hesitate to repeat it under circumstances at all similar to those of this case.

I could hardly express my own opinion on the subject in more appropriate or forcible words than those used by Dr. Greene, in speaking of the most formidable of the cases on which he operated. "We had to decide whether an attempt at removal gave her a possible chance for life; for my own rule of action is, when a certainty of death stands opposed to a possible chance of safety by operative procedure, to give the patient the chance, no matter how small it is, provided he or she makes the choice, with a full understanding of all the facts, and with no prompting by the surgeon."

I have thought the case worth recording, also, as adding one more to the conditions which may make it justifiable to attempt the extirpation of a bronchocele. The operation is indicated usually by the effects of the pressure of the tumour on the trachea, œsophagus, or great vessels. This is the first case which I have met with, either in practice or literature, where the suppuration caused by the bursting of the tumour was the motive for interference.

LONDON, October, 1872.

ART. II.—*Venereal Stricture of the Rectum.* By ERSKINE MASON, M.D., Adjunct Professor of Surgery in the University of New York; Visiting Surgeon to the Charity and the Roosevelt Hospitals, New York.

WHEN beginning my visits, some six years ago, as surgeon to Charity Hospital, my attention was arrested by the number of cases of stricture of the rectum in the wards. These cases all occurred in the female wards and among those who were regarded as syphilitic patients. I then viewed these strictures as one of the manifestations of constitutional infection, and, in addition to local treatment by the introduction of bougies, had them placed under anti-syphilitic remedies, indeed some of them had been already under this treatment for some time. Upon consulting several surgical authors, I found that this was both the opinion entertained by them and the course of treatment recommended.

Since that time, however, some forty cases have passed under my observation both in private and hospital practice, and my views, both regarding the nature as well as the treatment of this affection, have materially changed.

Most of these cases have been seen in hospital practice, and notes of many of them have been preserved. Soon after beginning to study these cases, I endeavoured to find similar ones in the male wards, and, failing in this attempt, was at a loss to explain why the men were so peculiarly exempt from what I then regarded as a manifestation of constitutional syphilis. From that day to this I have looked in vain, at Charity Hospital, for a single case of stricture of the rectum in a male patient, which was evidently due to venereal origin.

It was not until some months or so after beginning to investigate this disease, that my attention was directed to a paper on this subject, by M. Gosselin, in the *Archives Générales de Médicine* for December, 1854, and I then began to study my cases in order to satisfy myself as to the correctness of the views he then announced. I entered upon this investigation with strong prejudices against their being due entirely to the effects of chancroids, and a bias received both from the writings of surgical authors, as well as from the views expressed by some of my medical friends. Indeed, many of the later works on surgery, though referring to the paper of M. Gosselin, still persist in treating this subject as *syphilitic stricture*, and some yet incline to the view that it is a result of a constitutional contamination. Indeed, it is only a short time since that this view was expressed in a clinical lecture delivered by a prominent medical professor, and he is only one of many who still regard this as a result of constitutional syphilis. Now, after a somewhat extensive experience

with this disease, I feel fully prepared to accept *in toto* the views first enunciated in the paper of M. Gosselin, to which we have referred, and the object of this paper is but to add our quota to the proof (which, to our mind, is beyond dispute) that these *so-called syphilitic strictures* are in *no wise* due to syphilis, but arise from the local and non-infecting chancroid.

It appears but right that we should here look, if but briefly, at what has been said upon this subject by the various authors who have written monographs upon diseases of the rectum, as well as to general surgical treatises.

White, of Bath, the first English surgeon, we believe, who wrote a work on stricture of the rectum (*Observations on Strictures of the Rectum*, Bath, 1820), makes no mention of the venereal poison as a cause of stricture. This is also the case with Mayo (*Diseases of Rectum*, London, 1833) and Frederick Talman (*Stricture of Rectum*, London, 1833), and even Mr. Syme, in a paper on diseases of the rectum, does not allude to it (*Dunglison's Am. Med. Library*, Philadelphia, 1839). Indeed, it would appear that the earlier English writers have passed over any venereal disease as a cause of stricture in silence. As far as we have been able to discover, the French were the first to have spoken on this subject. Thus, as early as 1815, Richerand speaks of *condyloms internes* of the rectum (*Nasographe Chirurgical*, tome 3, p. 438, Paris, 1815). Others have spoken of tubercles in this organ causing stricture, but Bushe, in his work on *Diseases and Malformations of the Rectum* (New York, 1837, p. 268), says that "neither Morgagni, Desault, Tanson, White, Copeland, nor Calvert say that these tubercles depend upon any specific cause." Both Richerand and Delpech, however, assert most distinctly that they depend upon the venereal poison. Bushe, in a short chapter on venereal ulceration of the rectum, says, "This ulceration may arise from the direct application of venereal poison, or it may be consecutive to disease in the genital organs, and they co-exist with other secondary symptoms. . . . . Should these ulcers be superficial, their edges regular and soft, and their secretion healthy, they will heal rapidly; but, on the other hand, should they be deep and painful, surmounted by hard, irregular edges, and secrete a thin fetid matter, they will not heal easily, and may become phagedenic." He does not, however, speak of this disease as causing stricture.

South (Am. edition, p. 47), in his edition of Chelius's Surgery, among the numerous causes enumerated as giving rise to stricture includes that of syphilis, and says, "The immediate cause of stricture of the rectum is always a more or less extensive inflammation or continual irritation of the rectum, in consequence of which there is secretion of plastic matter, thickening and elongation of the tissue."

According to Copeland (*Diseases of Rectum*), Dessault saw stricture

so frequently in combination with other symptoms, decidedly venereal, that he did not hesitate at once to put his patients under a course of mercury, and he says with a success that fully warrants us in considering it as very frequently a symptom of the venereal disease. It must be stated here, however, that, at the same time, he resorted to local treatment by means of the bougie. Copeland further remarks, while speaking of stricture, that it is much more frequent than physicians imagine, and is not so frequently of a cancerous nature as authors would lead us to believe.

Curling, in his *Observations on Diseases of the Rectum* (London, 1851, p. 79), in speaking of chronic ulceration of the rectum, says:—

"A few years ago, Mr. Avery exhibited at the Pathological Society, a specimen of ulceration of the rectum, the history of which clearly showed the connection of the lesion with syphilis, and its probable occurrence as one of the secondary phenomena of the disease. Immediately within the anus, which was surrounded by a circle of vegetations, the ulcer commenced, extending three inches upwards, and occupying the whole of the internal surface of the rectum to that extent. The edges were rough and uneven above, and below soft and rounded; the whole surface was smooth, exhibiting the muscular fibres of the intestine quite bare. The patient, a young woman, æt. 22, died in the Charing Cross Hospital, from erysipelas of the face, and had been troubled with a discharge from the rectum for about seven months previously. She had been in the hospital a year and a half before with an extensive sloughing ulcer in the fourchette. When she died she had numerous indelible marks of syphilitic eruption on the limbs and trunk, and was suffering from sorethroat."

This ulceration of the bowel, we are inclined to believe, however, was not the result of syphilitic infection, but of chancroidal disease, and, had the patient lived, she would have been the subject of stricture in all probability, and that, too, in spite of any anti-syphilitic treatment which might have been adopted.

Mr. Curling, it would appear, is not a believer in the so-called "syphilitic stricture," for, when speaking of stricture (p. 88), he remarks "that Dessault supposed that they were of syphilitic origin, but his observations in reference to that point are not satisfactory.

Mr. Quain, in his excellent work on the rectum, while speaking of ulceration, and stricture as a result, does not allude to venereal disease as a cause.

In turning to some of the standard authors on general surgery, we find Chelius (edited by South, American edit., p. 47), in enumerating the causes of stricture, includes syphilis as one. Erichsen makes no mention of any venereal stricture, but speaks of having met "that form which occurs low down, several times in young women otherwise perfectly healthy." It is so also with Fergusson, Pirrie, and Druitt—they making no mention of a venereal stricture in their works on surgery. Gross, in his Surgery, says, "A *syphilitic stricture* is occasionally met with in the lower bowel, caused not by any constitutional taint, but by direct inoculation with chancrous matter." The description he gives of this disease is more graphic than any we have met with in any work on surgery. Mr. Henry Smith, in his article on

diseases of the rectum in *Holmes's Surgery*, regards this disease as due to constitutional syphilis, and advocates "the exhibition of small doses of mercury and iodide of potassium" in the treatment of the same. Lancereaux, in his Historical and Practical Treatise on Syphilis, confirms the ideas expressed by Gosselin; and Bumstead, in his thoroughly comprehensive and classic work on venereal diseases, is an advocate of the disease being chancroidal and not syphilitic. Berkeley Hill, on the other hand, in his book on *Syphilis and Local Contagious Disorders*, while giving an accurate description of this stricture, says, many observers, among whom is Gosselin, do not regard this as a product of the syphilitic diathesis, but does not state his own views on this subject; we infer, however, he entertains the more modern view in regard to this affection when he says, "*In the treatment* of syphilitic stricture of the rectum, specifics are of little value."

Among the more recent authors, we find that Dr. Van Buren, in his *Lectures upon Diseases of the Rectum* (1870, p. 109), regards the chancroid, especially when it takes on a phagedenic character, as the only mode in which any form of the venereal disease is certainly known to occasion stricture of the rectum.

On the other hand we find Mr. Allingham, in his recent work on *Diseases of the Rectum*, in referring to ulceration of the rectum, uses the following language: "I have no doubt that a good many are of syphilitic origin. They may be the result of either secondary or tertiary syphilis; and other syphilitic lesions will be observed, but sometimes the ulceration of the bowel, with a syphilitic history, is the only symptom present" (p. 158); and with reference to stricture of the rectum he says, "I am of opinion that some strictures are syphilitic in their origin, and, when they are, the patients generally do well" (p. 187). For these cases he also advocates anti-syphilitic treatment (mercurials and iodide of potassium).

In some of the cases of ulceration which he relates, we think we would rather regard them as the result of the chancroidal virus, than that of true syphilis. Again, Hamilton, in his recent excellent work on the *Principles and Practice of Surgery* (1872, p. 775), remarks, "that far the most common cause of rectal stricture in public practice is syphilis and chancroid. At Charity Hospital these cases are constantly under observation, and they are observed to be particularly frequent among the women. . . . . It is often due to the cicatrization of a chancroidal ulcer; but in a majority of the cases the stricture has a nodular feel, and is accompanied with other evidences that the patient is laboring under a syphilitic diathesis." It is sufficiently evident both from this quotation, as well as his remarks which follow under the head of treatment, that he regards both syphilis and chancroid as at times giving rise to this disease. In consulting many of the authors we have just alluded to, especially the works on general surgery and treatises on affections of the rectum, we are inclined to regard, that the conditions which many of them are pleased to speak of under the term

"simple stricture of the bowels," both from the locality, sex, and appearances of the stricture described, as well as symptoms, were indeed, in many instances, the sole result of chancroidal disease. And some of the cases related as instances of the "simple stricture," we feel confident would now be regarded by many as a result solely of chancroids.

It is not to be wondered at, that this form of disease which we are considering was grouped among the constitutional effects of syphilis by those who wrote on this subject prior to the year 1852, up to that time all venereal sores being regarded as arising from one and the same poison. It was in this year (1852), it will be remembered, that the old doctrines entertained regarding venereal ulcers were overthrown by Bassereau, and the duality of chancrous virus clearly taught. And his views we believe are those now entertained by the majority of syphilographers of the present day.

The first who investigated the relation that stricture of the rectum held to constitutional syphilis, with the light just thrown upon venereal poison by the work of Bassereau, and who, we believe from our own studies, clearly pointed out the cause of this rectal lesion, was Dr. L. Gosselin. His investigations, be it remembered, were commenced in 1854, in the Lourcine Hospital at Paris. His conclusions were the results of observations made upon twelve patients, and his valuable paper was published in the *Archives Gênerales de Médecine* for December, 1854. All his cases were females, and the subjects of chancroids. But four of these cases presented symptoms of constitutional infection, and in two of his patients stricture was developed, while under his observation, in the wards of the hospital, they being under treatment for chancroids involving the anus. The conclusion arrived at by this distinguished investigator was, that the affection known as "*syphilitic stricture*" was due to the local sore, "the chancroid," rather than a result of constitutional syphilis.

Confirmatory of this view of the subject, Mr. Holmes Coote has reported a case in the *Medical Times and Gazette* for June 27, 1855. He says:—

"In 1849 a subject for dissection at St. Bartholomew's Hospital presented a singular morbid condition of the rectum; the canal was narrowed, and upon opening the bowel a large patch of mucous membrane equal in extent to the open hand of a man and involving the whole circumference of the bowel, had been destroyed by ulceration, leaving a firm and unyielding cicatrix, with irregular borders, and smooth reddish or brown surface, across which passed lines or seams. The surrounding parts were slightly thickened towards the anus, but otherwise not altered in structure. Those who saw the specimen were struck with the resemblance it offered to the cicatrix of a phagedenic ulcer as seen upon the external integument." . . .

Since the greater portion of this paper was prepared, we have read with pleasure the "Case of Fibrous Stricture of the Rectum" (evidently chancroidal in origin), reported by Dr. W. R. Whitehead in the number of

this Journal for January, 1871. In his remarks upon the case he states the arguments of Gosselin against the opinion that the disease is a constitutional effect of syphilis; and says they seem to be conclusive. He also mentions that "Despries points out very clearly the relation between phagedenic chancres of the rectum and stricture of this intestine," he having observed the progress of the disease from the appearance of the "soft chancre" about the vulva and anus to the complete development by cicatrization of a fibrous stricture in the lower portion of the rectum. In this paper, however, Dr. Whitehead still speaks of stricture "the consequence of syphilitic ulceration." We presume by this that he regards the chancre and chancroid as but different manifestations of the same disease.

In regard to the cause of this kind of stricture, and the views formerly entertained by writers on the subject of syphilis, it is not surprising that the disease came to be regarded as syphilitic in origin, and even at the present time is looked upon in that light by many in the profession.

It does not appear at all remarkable that we might expect to find constrictions in this part of the mucous tract, as well as in other portions, the result of constitutional infection. But is this the case? Do we find the burden of proof tending in this direction? From a careful study of what has been written on this subject, and from personal observation of now over some forty cases, and in a hospital which affords unlimited opportunities for the study of syphilis in all its varied manifestations, we have no hesitation in affirming our belief that venereal stricture of the rectum is due not to any syphilitic cause, but solely to the result of chancroids; and, if constriction of the intestine occurs as a result of constitutional affection, it must be an exceedingly rare exception to the rule. We have more than once seen a chancre on the verge of the anus, and mucous patches in that locality without number, and these patients have been under observation for months, but never have we found stricture to follow. Not so, however, in the case of chancroids in this locality.

We have repeatedly noticed the anus become contracted in women after the healing of several simple chancroids involving this portion of the intestine, and have predicted to the house staff that many of these women would in all probability, sooner or later, become the subjects of stricture. Could some of them have been retained several months in the hospital, we feel confident our predictions would have been verified.

I have made sure that these sores were true chancroids in repeated instances, by inoculation upon the thighs of the patients, and obtaining the characteristic ulcer. It was impossible to watch these patients, to see whether they returned to the hospital with any after-affection of the bowel, for various reasons, chief of which are, that our house staff are constantly changing from one service to another, and that a number of this class of our patients appear to deem it essential to assume a new name each time they apply for admission, and often enter a different service, and,

we not being on constant duty at the hospital, they readily escape the attention of the visiting surgeon. Within a few months, however, I have learned from Dr. Bell, visiting surgeon to the House of Mercy, that he has under his charge in that institution a patient with stricture of the rectum, who some time since states she was under my care for chancroids about the anus. The name she is now known by, however, does not appear upon the books of Charity Hospital, and therefore much that is of interest to me in her case is lost.

Of one of the cases which had been under my care for chancroids I have been able to learn the future history. This patient some little while after leaving my service returned to the hospital with stricture of the rectum and Bright's disease, from which latter cause she died in one of the medical wards. While under medical treatment she was also subjected to the occasional introduction of bougies. The post-mortem appearances of the rectum, as recorded on the hospital books, are as follows: "The rectum for a distance of about six inches is very much ulcerated, thickened and riddled with sinuses which freely communicated with each other, and with one which opens externally. There are little bridges of thickened mucous membrane, with sinuses underneath as high as five inches above the external sphincter. There is no distinct stricture, but a general narrowing of the bowel, from the thickening of its coats." With regard to phagedenic chancroids affecting the anus and eating into the bowel we have seen five cases, which, from the terrible destruction of the parts, we well remember.

Constriction of the rectum followed under our own observation, and that very shortly after the healing of the chancroids had taken place.

Another and strong proof to us that this disease is the result of chancroids, and not a sequence of syphilis, is, that in fifteen of our cases the patients not only denied ever having had any secondary or tertiary symptoms, but, after close inquiry and critical examination of the person, no such traces of the disease were to be discovered; while in two cases, which passed under observation, the symptoms of stricture preceded any secondary manifestation of constitutional syphilis.

Those who are prone to regard this stricture as a result of syphilis are accustomed, we believe, to group this among the later manifestations of the disease, as in the case of constrictions of the larynx and œsophagus. But with these latter organs the change is due to the result of gummy products, and the changes they undergo. We do not wish to be understood as denying, that gummy tumours ever occur in the lower portion of the alimentary canal; but in connection with stricture of the rectum, what observer has ever detected these deposits? With a view to determine this point, I placed in the hands of Dr. Edward G. Janeway, specimens of stricture of the rectum from two of my patients, and he reported, that nothing like gummy tubercle could be detected.

We are aware that cases of ulceration of the colon have been reported by

syphilographers, evidently the result of syphilis, but these, as in Cullerier's cases, were cured by anti-syphilitic remedies, especially the iodide of potassium, in large doses administered both by mouth and rectum. Such cases, however, are exceedingly rare, and I do not know that stricture of the rectum ever was known to follow this ulceration.

Strictures of the rectum are admitted by all authorities, we believe, to be more frequently met with in the female, no matter from what cause they arise. In this particular variety, such undoubtedly is the case. All our cases occurred among women, and, as we have before stated, all our endeavours to find a case among the male patients of the hospital have been unsuccessful. Gosselin in his papers speaks of having seen it in the male, but regards it as a rare occurrence. Mr. Coote, however, in the article before referred to, says he is "informed by Dr. Turner, from Massachusetts, that he has frequently seen cases (so-called) of syphilitic contractions of the rectum in male patients in the hospital at Deer Island, Boston." I am not a little surprised at this statement, for in all the articles I have read on the subject of stricture, there is no one who has met with them in the male so frequently as they are said to have occurred at the Deer Island Hospital.

This disease we must regard from all our experience thus far as essentially peculiar to the female; and its occurrence in the male must be regarded as but a rare exception to the rule. And this statement, we think, will be confirmed by most observers.

The reason of the appearance of this disease so frequently in the female must be evident to any one at a glance. The facility with which chancroids upon the vulva will, from their secretions, inoculate the verge of the anus, and from this new foci of disease involve the rectal walls, is too well known to those who see much of chancroidal ulcers in the female. The way in which these strictures arise may be, *in our opinion*, as follows:—

First.—The walls of the rectum become inoculated through the secretions from the sores upon the vulva, thus giving rise to chancroidal ulcers in this portion of the intestine, and from the cicatrization of these ulcers, the constriction takes place.

Second.—The presence of chancroids either at the orifice of the vagina, or about the anus, gives rise to an inflammation of the areolar tissue surrounding the lower portion of the gut, and, by the effusion of inflammatory material at certain points, gives rise to constriction, either in this way alone, or by indirectly producing inflammation and ulceration of the mucous coat of the bowel.

Third.—From direct inoculation through improper connection—that this may occur, none will deny. But I have never been able to discover, from any of my patients, that such has been the case in any instance; though, at the same time, I have on several occasions seen patients enter

the hospital with chancroids upon the anus when none existed upon the vulva.

Mr. Holmes Coote, speaking under this head, says he is inclined to the belief that the disease begins in inflammatory thickening and granular degeneration, and thence ulceration, rather than ulceration from the commencement; and then asks, If so, is it a primary or secondary affection? For his own part he regards it as a primary affection.

The locality of this stricture is between one and two inches above the anus. In but three instances have we met with it as high up as three inches. From our experience we should locate its usual position as two inches above the anus. Thus in sixteen of our cases its locality was two inches above the anus.

Occasionally we meet with two strictures in the same individual. In three cases we have seen this condition very beautifully shown, and in all of them the lowest stricture was one inch from the anus, while the site of the second was about one inch above that of the first.

One case we had the opportunity of examining was regarded by some as an instance of three constrictions, but, as the third was hardly what I should call a well developed stricture, I am unwilling to view it in the light some took of the case, though, had the patient been permitted to go on without treatment, I doubt not she would have been the subject of three well developed strictures.

The appearances of this stricture and adjacent portion of bowel vary somewhat in different cases. And here let me say, that, to obtain a satisfactory view of the diseased parts, no speculum that I am acquainted with can compare to that of Sim's vaginal speculum. We have found this stricture evidently due to concentric thickening of all the tunics of the intestine, and in these cases the stricture was circular and very hard, perhaps some would denominate it "fibrous stricture." Again it resembled a diaphragm stretched across the bowel, and the orifice was either thickened or in some cases thin as a sheet of ordinary letter paper. In some instances the circumference of the opening was ulcerated, while in others no such action was detected. This diaphragm we speak of as stretching across the bowel, in some instances was tough and unyielding, while in others it readily yielded to slight pressure, and could be pushed upwards by the finger. The size of the opening varied very much, but as a rule the tip of the index finger would be permitted to pass without exciting great force. In one case, however, the constriction was so tight that it would only admit of a number four (English scale) urethral bougie. In not all the cases was the entire circumference of the bowel affected, and in the greater number of these it was the posterior portion that was involved. I regret that in the notes of all my cases the exact appearance of the stricture is not given. It is not uncommon to find little tubercles, or rather excrescences, in the immediate vicinity of the stricture, which at

times impart to the touch the sensation of a roughened condition of the mucous coat, while again it has a velvety feel. Ulceration of the walls of the intestine always existed to a variable extent above the stricture, while in some cases it was observed below the site of stricture, and at times even invading the margin of the anus. Some of these ulcerations were so characteristic of the sore that we are pleased to denominate *chancroid*, that I feel confident, had they existed upon the vulva, none would have regarded them in any other light.

When the stricture is due to membranous bands involving only a portion of the calibre of the intestine, post-mortem examination will fail to reveal the presence of any stricture, owing to the great relaxation which then takes place in the parts. This circumstance was well shown in the autopsy of one of my cases, which a few days before death only permitted the passage of the finger with some difficulty. Upon inspecting the intestine after its removal from the body, my house surgeon naturally enough asked, "What has become of our stricture?" for the rectum would then, owing to its relaxed condition, have allowed the passage of the largest bougies.

Associated with this affection we not unfrequently find abscesses in the neighbourhood of the anus, fissures, hypertrophied condition of the integument, hæmorrhoids of every description, prolapsus of the rectum, together with fistula in ano, and of the recto-vaginal or recto-labial variety.

In at least thirteen of our cases, some one of these complications existed.

With regard to fistula in ano, we have seen the communication with the bowel both above and below the site of stricture.

The *symptoms* which usually indicate the presence of this stricture are, first, an uneasy sensation, upon defecation, not amounting to positive pain, and which our patients have almost without exception referred to some uterine derangement, and for which, in more than one case, they have been subjected to treatment. Indeed, it was only a short time since that we were informed of the case of a lady who had been treated by no less than seven different physicians for the relief of this symptom, and yet not until she had fallen into the hands of the eighth medical man, was her rectum examined, and the source of her trouble detected to be a stricture of the rectum. Shortly after this uneasy sensation in the rectum begins, as a rule there is more or less constant discharge of purulent matter, and this at times associated with bloody discharges. The bowels are often constipated for a time, soon, however, to be followed by an almost constant diarrhœa, which may be at times utterly beyond the control of the patient. Upon examination, the bowel will be found extremely painful to the touch, and attempts to pass the finger through the stricture will often give rise to intense suffering; upon withdrawing the finger, it will be followed by a purulent or bloody discharge, or a mixture of both. Pain

almost constant may be complained of, either in the back, iliac regions, or down the posterior portion of the thighs.

Associated with these manifestations, we sooner or later meet a train of dyspeptic symptoms; and in several instances we have seen the stomach so irritable at times that the blandest fluids would give rise to vomiting. These symptoms, if allowed to continue, are apt soon to tell upon the general condition of the patient, and, from being robust, we have seen women become pale and emaciated; indeed, so feeble has been their condition that they were unable to leave the bed. In other cases sudden and rapid development of phthisis or Bright's disease has occurred, which soon brought the case to a fatal issue.

We have never seen death result from this disease alone; phthisis being the most frequent complication which ensues, and to which has been attributed the death of the patient.

Though this variety of disease is necessarily associated with a train of symptoms similar in many respects to those which accompany stricture arising from other causes, yet it has characteristics so peculiarly its own, that, with a careful investigation into the history of the case, and inspection of the parts, an error in *diagnosis* will scarcely be made. The only disease that it might be confounded with appears to us to be cancer. One case which occurred in the service of Dr. Chas. A. Budd, at Charity Hospital, and which I examined with him, certainly had very much the same indurated, lumpy feel which is met with in malignant stricture. This was the result of a cellulitis caused by the introduction of bougies.

With regard to chancroidal stricture, it is rarely met with in the male, its locality is that of the lower portion of the rectum; seldom will it be found at a point higher than three inches above the anus, the most frequent site being between one and two inches from this outlet. Cicatrices of chancroids almost invariably will be met with upon the genitals. No tumour or hard nodules such as we see in cancer are found either between the walls of the bowels, or the fungous excrescences projecting into the bowel. The ulceration above the seat of stricture gives rise to profuse purulent discharges (rarely a bloody one). With respect to this ulceration, we regard it as peculiar to this disease in its early stages, for in several cases of malignant stricture which we have seen, no extensive ulceration had commenced till the disease had existed some time, and in two instances we have seen malignant stricture without a vestige of ulcerative action; while in the chancroidal variety there is ulceration from the commencement of the disease. Both varieties of stricture are excessively painful. With the venereal the pain is principally when the stricture is touched, or during the periods of defecation. Scirrhus of the rectum, we believe, is more frequent during middle life, while chancroidal is met with chiefly between the ages of seventeen and thirty. In cancer the use of bougies often aggravates the disease, and at best is regarded as a question-

able mode of treatment; whereas the chancroidal stricture is greatly benefited, if not in some instances cured, through this practice.

With the malignant variety, the disease is not necessarily confined to the lower portion of the rectum, and begins, we believe, by deposits in the walls of the intestine; lastly if the disease be cancer, the microscope will reveal the fact. We have said nothing with regard to the epithelial form of cancer which is met with at the same periods of life as the chancroidal, in speaking of the differential diagnosis, but here as with schirrus, the microscope will reveal its true character.

In respect to the *treatment* of this affection, it must be conducted on very much the same principles which guide us in the management of stricture of the urethra; and as with the urethra, if we are unable to promise our patients that their trouble will never return, we may often place them in that condition in which, by careful attention and timely resort to proper means, they may be comfortable through life.

During my earliest experience with this disease, regarding it then as a syphilitic affection, I made faithful trial with anti-syphilitic remedies (mercurials and the iodide of potassium), but without the slightest effect upon the disease. Caustics, either in the solid form or in solution, I find only aggravate the suffering of the patient, without relieving the disease. Astringents given to check the diarrhœa will often prove but of slight avail, and suppositories given to relieve pain, often are but a source of great annoyance from the tenesmus which frequently follows their use. In all cases our medicines must be of the blandest variety, and in the use of bougies great care is required. The accidents which may happen with this instrument, and at times even in careful hands, are too well known to require any further mention at this time.

For the past two years we have found the greatest benefit to arise from the use of *subcarbonate of bismuth* given both by the mouth and by enema in combination with glycerine and water, and where great pain existed morphia or the aqueous extract of opium have been added, the latter, however, I prefer. Under this course of treatment the diarrhœa will often cease entirely, or be greatly under control, the ulcerations assume a healthy action, and the extreme sensitiveness of the parts subsides. Injections of warm water and oil were resorted to where the bowels were constipated, and in all cases an enema has been ordered daily of warm or cold water with a small quantity of carbolic acid for the sake of cleanliness. If too much of this acid is used, it *here* acts as anything but as an anæsthetic.

In the use of bougies, which must always be used for the purpose of dilatation, I have but in a few instances preferred to increase their size slowly; making use of the same bougie for some time even after the stricture permits of its easy passage. We believe we have found benefit to follow the smearing the bougie with the extract of belladonna, thereby lessening the pain the patient often suffers after the use of this instrument.

In a majority of cases we feel satisfied from our experience that the introduction of a bougie twice or three times a week will accomplish more towards a cure than a more frequent introduction, especially if the instrument be allowed to remain a few moments in the grasp of the stricture. Elastic tubes to be distended either by air or water have been frequently used for the purpose of dilatation, and in some instances perhaps have possessed advantages over the ordinary means, as for example in the case reported by Dr. Whitehead, in his paper before referred to. In his case, an India-rubber condom attached to the stem of a syringe being the means employed.

The beneficial effects which in some cases are observed in this variety of stricture to follow the use of the bougie, both during its use as well as for some time after the instrument has been abandoned, is well illustrated in the following case, related to me by my friend, Dr. W. B. Eager, Jr.

In August, 1864, Mrs. H., aged twenty-eight, came under his treatment with a stricture of the rectum, situated about two inches above the anus. Symptoms referable to this disease began during the summer of 1861. The stricture was too tight to admit the tip of the finger. She was treated by gradual dilatation for a period of a little more than three months, when the largest bougie could readily be passed, all her symptoms having now subsided, she was discharged cured. In 1858, this patient had two sores upon the vulva the size of the little finger nail, and two weeks afterwards a larger sore appeared upon the side of one thigh. From 1864 up to the present time, no manifestation of constitutional syphilis has the doctor observed. On the 15th of January, 1871, she again came under his treatment for trouble with her bowel. She stated she had been free from all rectal trouble until a year ago, when she noticed, if she allowed herself to become constipated, she would have trouble in defecation. She now complained of pain in the back and iliac regions, and painful defecation with almost constant purulent discharge from the bowel.

Examination showed the remains of the old stricture, but the calibre of the bowel at that point unimpaired. The wall of the bowel was rough and painful to the touch, due to ulceration of the mucous coat. Under sub. nit. bismuth in ten-grain doses three times a day, together with an ounce of the following injection every fifth or sixth day: Bismuth ℥j, glycerine and water, each two ounces, she improved rapidly, and on March 15th, 1871, the purulent discharge was not noticeable, nor the pain, while at stool, so acute. Here, then, is a case where no relapse has occurred during an interval of five years after the use of bougies was discontinued.

Where the stricture is of the annular variety and of firm, fibrous feel, we will expedite matters very much by resorting to the knife, after the manner proposed first by Wiseman in 1676 (South's Chelius, p. 51, vol. iii.). When division is resorted to, all that is required is to notch the stricture in three or four places, and these incisions need not exceed a line in depth. I have repeatedly resorted to this method with pleasing effects, and have never seen any troublesome hemorrhage follow. In all these operations the instrument we have made use of was Couper's hernia knife.

Immediately after this operation, we have passed a bougie of a size that would well dilate the parts. We much prefer this method to such means as forcibly tearing the stricture, either by the fingers or by the use of any instrument made for this purpose.

In a patient of Gosselin's, a girl, 18 years of age, in whom he had incised a hard fibrous stricture some months before death, the autopsy revealed no hard fibrous ring, though ulcerations above the stricture still continued.

In two of our cases, where the stricture appeared as a membrane stretching across the bowel, after having notched its circumference with the bistoury, and while the patients were still under the influence of ether, we passed one bougie after the other until the largest size was reached.

Both these cases were of recent origin, and a cure was rapidly obtained, without an unpleasant symptom.

In those sad cases of this class of stricture with which we every now and then meet, where the ulceration is extensive, and often little progress has been made in dilatation, yet the pain on defecation is so excessive, and which, together with profuse purulent discharges, is fast sapping the constitution and hurrying the patient towards an early grave; in these cases, as in those of cancer, I believe we are justified in resorting to lumbar colotomy, and thus mitigating if not entirely relieving the sufferings of the patient, despite the great inconveniences which naturally arise from an artificial anus.

For some time I have believed this to be the proper course to pursue, and would have adopted it in two cases, had not a rapid phthisis supervened in one case, and general anasarca from Bright's disease in another, which speedily terminated in death.

I had never known that lumbar colotomy had ever been proposed, still less put in practice, in this type of stricture, till I read the very excellent paper of Mr. Wm. Allingham, F.R.C.S., on *lumbar colotomy*, in vol. i., new series, of *St. Thomas's Hospital Reports* for 1870.

In this paper is given the history of a woman, æt. 24 years, who was the victim of a venereal stricture. The stricture had been previously watched and variously treated for some time, but the constriction increased despite all that was done. The bougie had been used, and retained for some days at various times, and the band forming the constriction was superficially divided with a straight knife in five or six places round the circumference of the bowel, and gentle dilatation used afterwards; but all seemed of no avail. The ulceration also perforated the septum into the vagina. After about two years of suffering, lumbar colotomy was performed in November, 1867. Four months after the operation she had gained ten pounds, and felt quite well in general health, and was able to go about and conduct her business as a milliner. The ulceration in great part healed without her taking any medicine, but the stricture continued tight. Ten months after the operation the patient came to this country; the ulceration had then quite healed, and the opening into the vagina had closed spontaneously. So comfortable was she, that she declined to have

anything further done with the stricture. Mr. Allingham adds that he has recently heard from this patient, and she continues quite well.

Another case is related, occurring in a man, aged 33, and the cause of his stricture appears to us to have been very likely due to chancroid. Colotomy was performed in 1866; at the time of writing his paper, 1870, the patient was well and able to carry on his business, that of watch-making.

Table of Thirty-one Cases of Venereal Stricture of Rectum.

Age.	Has had Constitutional Syphilis	Complications.	Locality of Stricture.
24	No	Recto-labial fistula and phthisis	between 2 and 3 inches above the anus.
36	Yes	Hæmorrhoids and prolapsus of rectum	2 inches above the anus.
24	Yes	Anus fissured and ulcerated	3 " " "
23	No	Recto-vaginal fistula and phthisis	2 " " "
38	No	Bright's disease	2 " " "
26	Yes	Recto-labial fistula	2 " " "
22	Yes	Phthisis and Bright's disease	2 " " "
28	Yes	Recto-vaginal fistula and fissures of the anus	2 " " "
33	No	Fistula in ano	2 " " "
29	No	Perineum almost entirely destroyed by a phagedenic chancroid	1 " " "
29	Yes	None	2½ " " "
28	Yes	None	2 " " "
24	No	None	1½ " " "
29	No	Fistula in ano	Two distinct strictures: first one about an inch above the anus, and the other two inches above the anus.
24	No	None	2 inches above the anus.
29	Yes	Fistula in ano	" " "
35	Yes		Two strictures; one half an inch above the anus, the other three inches.
29	Yes	Perineum almost entirely destroyed from chancroids	1 inch above the anus.
28	Yes	Phthisis	2 inches above the anus.
34	Yes	Enormously hypertrophied labia	2 " " "
29	No	Recto-vaginal fistula	1½ " " "
20	Yes	Recto-labial fistula	1⅞ " " "
19	Yes	Recto-vaginal fistula	1 " " "
37	No	" " "	2 " " "
24	Yes, but not till 33 mos. after stricture	" " "	2¼ " " "
20	No		2 " " "
31	No		3 " " "
28	No		2 " " "
25	No	Recto-vaginal fistula	2½ " " "
21	No	" " "	3 " " "
21	Yes, but not till 4 years after she had stricture	" " "	2½ " " "

In 15 cases there had been no symptoms of constitutional syphilis.
In 14 cases there had been symptoms of constitutional syphilis. In some of these cases stricture appeared just after having had chancroids.
Recto-labial fistulæ were present in 3 cases.
Recto-vaginal " " " 2 "
Fistula in ano " " " 4 "
Location of stricture was in 16 cases two inches above the anus.
" " " 3 " one and a half inches above the anus.
" " " 5 " between two and three inches above the anus.
" " " 2 " there were two distinct strictures.
" " " 3 " one inch above the anus.
" " " 3 " three inches above the anus.
Age of youngest patient, 19 years.
" oldest " 37 "

In conclusion, the deductions which we would draw, both from what we have read and from personal observations with this form of disease, are as follows :—

The disease appears peculiar to women ; that it occurs chiefly between eighteen and thirty-five years of age.

The locality of the stricture, as a rule, is between one and two inches from the anus.

That anti-syphilitic remedies (mercurials and iodide of potassium) possess no beneficial influence over the disease.

That this disease is more frequent than is generally supposed.

That though unwilling to deny that a constriction of the rectum might occur, as a sequence of a *syphilitic ulcer*, yet we believe that such occurrence must be *remarkably rare ;* and therefore the term "Syphilitic Stricture" is an improper name, and hence the disease, being due to the chancroid, should be known as the Venereal, or rather *Chancroidal Stricture.*

That where constitutional syphilis exists in a patient with this form of stricture, it is but a mere coincidence, there being nothing in the syphilitic disease preventing a patient contracting chancroids again and again.

That in the treatment of this disease, caustics, no matter of what variety, tend but to aggravate the disease ; and when the patient passes from under our care, she must be told of the necessity of occasionally introducing a moderate sized bougie. And finally in some obstinate cases of ulceration and stricture, lumbar colotomy is not only justifiable, but requisite either as a means for relief of suffering, or towards a radical cure of the disease.

ART. III.—*On Thrombosis of the Arteries of the Extremities.* By JOHN A. LIDELL, M.D., of New York.

IN a paper published in the number of this Journal for October, 1872, the writer gave an account of thrombosis as it presents itself in the chambers of the *heart*, in the *pulmonary artery*, and in the *veins* of the extremities. In the present article, however, he proposes to discuss, also mainly from a clinical stand-point, thrombosis as it occurs in the systemic arteries, especially those which belong to the extremities.

But, before commencing this discussion, there is a preliminary question of great importance which should be clearly stated and fully met. It is the following: Does the blood ever spontaneously coagulate in the peripheral arteries during life, as we have elsewhere shown that it not unfrequently does in the peripheral veins, or, in other words, does systemic arterial thrombosis ever take place? This question must be answered in

the affirmative. The occurrence of such cases as the following, related by Billroth, places the matter beyond cavil and doubt. He says:—

"Not long since I observed an old man, who was taken into the hospital for spontaneous gangrene of the foot. He was so thin and the arteries were so rigid, that the pulsations of the femoral could be distinctly followed into the hollow of the knee. Subsequently the gangrene progressed, and at the same time the pulsation in the lower part of the artery ceased. About a fortnight later, shortly before death, when the gangrene had advanced to the knee-joint, the pulsation had ceased at Poupart's ligament. The autopsy confirmed the diagnosis of complete arterial thrombosis. The gangrenous leg was so completely mummified that I cut it from the body, and, to preserve it from further destruction and worms, varnished it. It is still in the surgical museum at Zürich." (*Billroth's General Surgical Pathology and Therapeutics*, p. 301, Am. Translation, 1871.)

We are, therefore, fully convinced that thrombosis of the systemic arteries really does occur.

But little attention appears to have been paid to this subject by English and American physicians. While much has recently been written on thrombosis of the peripheral veins, and on the plugging of the peripheral arteries, as well as the pulmonary, with embolia that have been brought from some distant part, very little has been said concerning the spontaneous occlusion of the peripheral arteries with coagula that have been formed from the blood on the spot. No mention whatever is made of arterial thrombosis even in the revised edition of Holmes's admirable *System of Surgery*, a work which claims to be brought "as far as possible, up to the latest time, both in authorized teaching and practice," although venous thrombosis and arterial embolism are both discussed in it with considerable fulness of detail. *Aitken's Science and Practice of Medicine*, *Tanner's Practice*, and *Hughes Bennett's Clinical Lectures*, also, do not contain any account of arterial thrombosis, although they are quite recent and decidedly voluminous works. Thus, it can be proved, if proof be needed, that thrombosis of the systemic arteries has hitherto attracted but little notice among English-speaking surgeons and physicians.

This subject, however, possesses no small degree of importance. Arterial thromboses is a disorder which not unfrequently presents itself in the extremities, as well as in other parts of the body. When these members are attacked with the so-called senile gangrene, it is generally, but not always, the principal cause. When symptomatic gangrene of the limbs occurs in the course of typhus and other forms of continued fever, in acute rheumatism, and in lying-in women, arterial thrombosis is often the sole cause. Finally, when the arteries of the extremities are obstructed with embolia, the vitality of the limb is generally not destroyed unless the embolism is supplemented, and the occlusion made complete, by the occurrence of thrombosis in the obstructed vessel itself, or in the collateral channels.

The data upon which this article is founded were gathered by the writer

mainly for his own instruction; but, thinking that they might be of interest to others, he has put them in shape for publication. Moreover, after what has just been said concerning the importance of the subject and the dearth of information with regard to it, no apology would seem to be required, if, perchance, the discussion of it in the following pages should be pretty thorough, and should attain considerable length.

Historical Sketch.—Before the time of William Cowper the occurrence of senile gangrene was commonly attributed "to a decay of nature, or an extinction of the vital warmth." (*Naish.*) About the year 1702, however, that distinguished surgeon and anatomist, *i. e.* Cowper, found the arteries extensively ossified in a leg affected with this disease which he had amputated for a man, in the sixty-seventh year of his age. Commenting upon this circumstance, he says: "I doubt not, but the like has often happened in aged people, especially where we find the progress of the gangrene not very swift, and its beginning from no external cause." (*Philosophical Transactions*, vol. xxiii. pp. 1195, 1196.) In a subsequent contribution, after again mentioning the same case, he remarks: "Since which I have met with several of the like instances in people of years, particularly in the leg of an old gentleman, whose toes and foot were sphacelated, the arteries of whose leg I have still by me, ... injected, as much as they could be, with red wax; in which the ossifications diminishing their channels in some places, and totally obstructing them in others, is made very evident. (*Ibid.*, vol. xxiv. pp. 1970, 1971.)

In 1721 Mr. Edward Naish, on examining the arteries of a leg which he had amputated because of gangrene, for a gentleman, aged 67, "found them for the most part ossified; that is to say, the trunk, where it was amputated, was ossified about two-thirds of its circumference. About a quarter of an inch lower the whole was bony, leaving so small an orifice that it would only admit of a hog's bristle; not a very fine probe that I endeavoured to introduce. A little lower it was on one side bony, on the other membranous, then again an entire case of bone. Here and there, for the breadth of a barley-corn, there would be no bone at all." He also says: "This ossification . . . . was, no doubt, the cause of the mortification." Furthermore, he declares: "I don't doubt but these cases are more common than we imagine. For when we see mortification seize the extremities of aged people, which we commonly attribute to a decay of nature, or an extinction of the vital warmth, this, I believe, is often the cause. And I am the more inclined to think so from two or three parallel cases I have been concerned in. (*Ibid.*, vol. xxxi pp 226–228.)

The sagacious Pott, however, about the year 1780, observed concerning the causation of spontaneous gangrene: "It has by some been supposed to arise from ossification of the vessels; but for this opinion I never could

find any foundation but mere conjecture." (*The Chirurgical Works of Percivall Pott*, vol. iii. p. 334, London, 1783.

In 1814 Mr. Hodgson wrote as follows on this subject:—

"The obstruction which is offered to the passage of the blood by the deposition of calcareous matter in the internal coat of arteries, was noticed many years ago by Cowper and Naish, and has been adduced as a frequent cause of mortification, more especially in the feet of old persons. Experience has proved this condition of the arteries to be at least a constant attendant upon one species of gangrene, to which the extremities of old subjects are liable; and I have found the three principal arteries of the leg nearly obliterated by calcareous matter in two fatal cases of this disease." (*Hodgson's Treatise on the Diseases of Arteries and Veins*, etc, p. 41.)

A few years later the illustrious Dupuytren made an important discovery concerning the etiology of this disease. On examining post-mortem the body of an old woman who had died of gangrene of the leg, at the Hôtel-Dieu, in 1824, he found that the arteries of the leg were obstructed with coagula; "here and there clots were noticed which plugged the vessel." In the same year, in a man aged 60, who had died of gangrene of the scrotum, he notes that "in the iliac vessels there were several clots." Subseqnently he met with some very striking cases in which mortification of the extremities was produced by the blocking up of the main arteries with coagulated blood; and in one of them, the obstruction-symptoms were so well marked that, two days before the patient's death, he predicted that "the internal [common] iliac artery would be found plugged as high as the aorta." (*Dupuytren, on Lesions of the Vascular System*, etc., pp. 18–23. Sydenham Soc. Translation, London, 1854.) No doubt other observers had already found coagulated blood in the arteries of the limbs affected with so-called spontaneous gangrene, but they had, so far as we know, attributed its formation to the gangrene itself; they had considered these arterial coagula to be consequences and not causes of the sphacelation, and in correctly interpreting this relation really consists Dupuytren's discovery. This great surgeon also held that the occluding clots in cases of spontaneous gangrene were mostly formed as a consequence of arteritis. He says: "The coagulation may arise in different ways; either by the contact of the blood with the inflamed membrane, or by mixing with coagulable lymph, or by ulceration of the artery;" but according to his views it always has its origin in arteritis. We shall, however, in the sequel, show that inflammation of the arterial tunics is not essential to the formation of coagula in the arterial canals, and that when we find, on examination post-mortem, arterial thrombi attended with arteritis, the inflammation is quite as apt to be the consequence as the cause of the thrombosis.

Cruveilhier held with Dupuytren that obliteration or occlusion of the arterial canals in consequence of inflammation is the most frequent cause of so-called senile gangrene. He also proposed to substitute for the terms senile and spontaneous gangrene, that of gangrene from the obliteration

of arteries. He supported Dupuytren's views, partly by new observations, partly by experiments on dogs, having succeeded in artificially producing gangrene by injecting irritant liquids into the arteries of the extremities of those animals. Cruveilhier also showed that a complete occlusion, not only of an arterial trunk, but likewise of its ramifications, with coagula (restraining all afflux of blood, whether direct or collateral, to the affected part), is indispensable to the production of gangrene. Concerning the method by which the arterial canals become occluded in such cases the same writer says: "Arteritis, like phlebitis, has for its immediate result the coagulation of the blood at all points corresponding to the internal inflamed surface of the vessel." (*Anatomie Pathologique du Corps Humain*, livr. xxvii. pp. 2–4.) In other words, the arterial canals in such cases are obliterated with blood-clot. But a closing up of arteries like this does not of necessity require the presence of arteritis to occasion it; any cause, as Carswell has demonstrated, sufficing, provided it produce a coagulation of the blood within these vessels (*Hasse*). Finally, Virchow, after showing that both phlebitis and arteritis, although often spoken of, are in reality very rare diseases, that neither of these inflammations is necessarily present when the formation of thrombi in any of the vascular canals occurs, and after pointing out the fallacy of some of Cruveilhier's experiments together with the erroneousness of some of his interpretations, proposed that the term *thrombosis* should be employed, not only in the place of phlebitis, but in the place of arteritis also; and his proposition has been generally accepted.[1]

Clinical Relations and Varieties.—Thrombosis of the arteries of the extremities has been observed much more frequently in connection with the so-called spontaneous gangrene of the aged than with any other disorder. The cases in which arterial thrombi were first discovered by Dupuytren were instances of what he called symptomatic gangrene, and occurred in subjects who were well advanced in years. We shall, therefore, in the first place, relate some instances of the so-called senile gangrene, in which the sphacelation appears to have been due to thrombosis of the arteries supplying the affected parts. The following is a brief account of Dupuytren's first case. It is here presented because it possesses some historic interest, besides affording a good illustration of the connection which subsists between arterial thrombosis and senile gangrene.

CASE I. *Dry gangrene of left foot, typhoid symptoms, and death; autopsy; the arteries, especially the left tibials, extensively ossified; the left tibials and*

[1] Trousseau and Rigot (*Arch. Gén.*, 1826 and 1827) had previously found that neither alcohol (of 36 degrees; sp. gr. 0.835), nor dilute nitric acid, nor putrefying animal substances, determined any inflammatory reaction in the internal membrane of arteries; such a result being only attainable by acrid substances, like the tincture of cantharides and of euphorbium, employed by Sasse. (*Hasse's Pathological Anatomy*, p. 65, Am. ed.)

their branches here and there plugged with thrombi; corresponding veins also filled with thrombi.—Catherine D., aged 71, a servant, was admitted into the Hôtel-Dieu in March, 1824. Health generally good until between two and three months before admission, when a black spot appeared, without apparent cause, on the third toe of the left foot, accompanied by pain which deprived her of sleep; the gangrene spread rather rapidly, and in two months involved the whole anterior half of the foot. There was a violet-coloured circle of inflammation found on both the upper and lower surfaces of this foot, to which the patient referred her suffering. The pulse intermitted irregularly. She was bled with marked relief and the foot was poulticed. About a fortnight after admission she became delirious; the gangrene again began to spread, she gradually sank, and died on May 5th.

Autopsy.—The mortified toes were denuded, dry, black, and considerably shrunken. The tendons and a part of the ligaments were destroyed, and the bones themselves had become diminished in size. The third metatarsal bone was partly carious. The arteries of this part of the limb presented traces of common osseous degeneration in an early stage; here and there *clots* were found which plugged the vessel. The veins, as far as the middle of the thigh, and especially the deep ones, were filled with dark clots. At some spots these clots had the yellowish appearance of fibrin. The aortic orifice of the heart was narrowed, but presented no ossific deposit. At some points of the aorta, the first traces of atheromatous degeneration were observable; at others there were bony patches of limited extent; there was one of larger size immediately above its bifurcation. The right carotid, brachial, and femoral arteries presented, here and there, flaky deposits of bone. In the affected limb these were more numerous; indeed, both tibial arteries were almost entirely converted into bone. (*Dupuytren on Lesions of the Vascular System*, etc., pp. 18, 19. Sydenham Soc. Translation.)

Comments.—This case may be presented as not a bad illustration of a pretty large class of cases in which mortification of the extremities spontaneously occurs. An old woman, while in apparently good health, was attacked, without apparent cause, by dry gangrene of one of her toes. The disease steadily extended itself. In two months it involved the anterior half of her foot, and in about four months destroyed her life by inducing septicæmia. On examination post-mortem, the arteries belonging to the affected part were found to be occluded with thrombi, which had arrested the blood-supply. The walls of these vessels also exhibited well-marked atheromatous and calcareous degeneration. This case then was an example of dry gangrene resulting from a thrombosis which began in the *minute arteries* of the lower extremity. As fast as the larger twigs became plugged up, the disease extended itself, until finally it destroyed the greater part of the foot, but at no time did the large arteries of the limb become involved.

It is worthy of special remark that there is no evidence whatever that arteritis was present in this case; there was no inflammatory reddening, no softening, no serous infiltration, no fibrinous exudation in the arterial tunics. On the contrary, it is distinctly stated that the arteries of the affected part presented traces of common osseous degeneration. Now, the process by which the coats of arteries become atheromatous and calcified, as the coats of these arteries appear to have done, is an exceedingly

chronic one, and must not be confounded with any acute or sub-acute inflammatory process.

Moreover, the coagula which plugged the arteries in this case were not embolia that had been brought in the blood from some distant part, but they had been formed out of the blood itself on the spot where they were found. Now, what induced the blood to coagulate in the living arteries with such destructive consequences in this case, or, in other words, what were the causes of the thrombosis in this case? They were several in number, and as follows: 1. Atheroma and calcification of the affected arteries. In consequence of this disorder the calibre of these vessels became diminished, especially in spots, and thus the blood-streams were retarded. In consequence of this affection also, the inner surface of these arteries became rough and disposed to the fixation of blood-clots. Finally in consequence of this affection, the walls of these arteries lost their elasticity and contractility and became unable to assist any longer in producing the onward movement of the blood. 2. Enfeebled action of the heart. In this case the heart being weakened by the decay incident to old age and likewise irregularly intermittent in its action, was no longer able to readily force the blood through the capillaries, especially in remote parts of the body, such as the toes and feet. 3. Increased coagulability on the part of the blood itself. It is not improbable that this old woman had acquired an hypnotic condition of the blood with an excess of the white corpuscular element, which caused it to coagulate more readily, and with smaller provocation, than it does in the normal state. Considering that all these causes of arterial thrombosis co-operated in this case, it is not difficult to understand both why the blood coagulated in the arteries of a remote extremity and why the coagulation began in the remotest capillaries of that extremity.

It should also be mentioned that venous thrombosis was likewise present in this case. "The veins, as far as the middle of the thigh, and especially the deep ones, were filled with dark clots." The same complication was observed in some other, but not in all, of Dupuytren's cases. There is reason to believe that when thrombosis occurs in the arteries of the lower extremity this complication is not unfrequently present. In the case just related, however, it does not appear to have done any particular damage, and probably did not occur till near the close of life.

The next case belongs to the same category as the foregoing. It occurred in the writer's practice.

CASE II. *Arterial thrombosis of the lower extremities; stagnation of blood in feet and legs; spots of gangrene occurred on feet; acute bronchitis, central thrombosis, and death; no autopsy.*—J. H., carman, aged about 70, but looking much older, native of Ireland, but a resident of New York for forty-two years, strictly temperate, rather thin and very pale, although he claimed that his health had generally been good, indeed,

he said that he had not been sick enough to employ a doctor for more than thirty years, until *January* 12, 1867, when the writer was called and found him in bed. He complained of feeling very dizzy and weak, and it was on account of these symptoms that I was brought; pulse 90; respiration 18; skin warm; tongue clean; bowels confined; appetite poor. He sleeps badly, and has much pain in his feet and legs. On examining these parts I found that the great toe and heel of his right foot, and the little toe and neighboring border of his left foot had been attacked with so-called senile gangrene. The mortification was limited, and lines of demarcation were already formed. The gangrenous spot on his heel was as large as a silver dollar. The slough on his great toe had fallen off to considerable extent, enough to lay bare both phalanges on their inner and upper aspect. The gangrene in the left foot, however, had not progressed so far. It involved the outer edge of that member at the base of the little toe, through a space about the size of a franc-piece, but the bone was not exposed, and a line of separation was forming. Both feet were also dark-red, swelled, hot, and tender; and on the dorsum presented, in addition, a remarkably tense appearance. His legs were likewise swelled, dark-red, and affected with a vesicular eruption; but the right leg, like the right foot, was more extensively diseased than the left one.

On inquiry I learned that the disorder in his feet began in the forepart of autumn; that the right foot was affected first; that this member became swelled, dusky-red, hot, and very painful; that about six weeks afterwards, *i. e.*, in the month of November, a black spot of incipient gangrene appeared on the great toe of this foot, at its inner side, and gradually extended itself; that in November the left foot also became affected with dark-red swelling, heat, and severe pain; that in the month of December a gangrenous spot presented itself on the outer edge of the left foot, near base of little toe, and slowly spread; that the occurrence of gangrene was attended with an increase of the pain in his feet, and that this pain abated considerably as soon as the lines of separation were formed.

The offensive odour of mortification was present. The eschar had fallen off from the great toe to a great extent, leaving the phalanges, for most part, bare, dry, and white. The eschar on his heel and on his left foot, however, had not yet dropped off. The femoral artery in each limb was ossified. The patient was very spare in habit and therefore the superficial femoral vessels could be quite readily examined. Prescribed magnesia sulph. ℥ss. in ginger tea, to move his bowels, tinct. aconiti radicis, gtt. j. in water, every four hours, to relieve his cerebral symptoms, liquor sodæ chlorinat. dilut. (part 1 to 12), to be applied on compresses to his feet and legs, and allowed a nourishing diet.

January 13. His bowels have not acted; ordered another dose of magnesia sulph., which produced the desired effect. After this he gradually got better, his appetite returned, his strength improved, the vertigo became much less troublesome, the swelling and the vesicular eruption disappeared from his legs, the swelling of his feet abated considerably, and the sores looked better and began to granulate.

22*d*. Again complains of having much pain in his feet; ordered lotio plumb. acetat. (℥j.) et opii (℈j.) to the pint, to be applied to them. He was, however, now sitting up in his chair, with his clothes on, and feeling as well or better than he had done for some time before I was called.

24*th*. His feet are doing well, and his general health is steadily improving.

February 1. He is not so well again. He has caught a cold and got bronchitis. His skin is hot and dry; pulse 90; breathing hurried, with considerable cough and abundant expectoration of unstained mucus; sleep uneasy; and he has nocturnal delirium, from which, however, he can be roused. He has anorexia, and is much debilitated. Prescribed ammoniæ murias, grs. viii. dissolved in syrup. zingiber. f ℥j. every four hours; also pil. quiniæ sulph. (gr. j.), every four hours; but these medicines are not to be taken together, or at the same time. Ordered also a large sinapism to be applied to his chest, and to be kept on as long as he can bear it.

3*d*. The fever has left him, and his breathing is no longer hurried. Prescribed syrup. senegæ, syrup. scillæ, āā f ℥j., mucilag. acaciæ, f ℥ij. M. A tablespoonful every four hours. His bowels were confined; directed them to be moved with magnesia sulph. in ginger tea. His mind continues to wander but his feet are doing well.

6*th*. General condition about the same as at last report. He does not sleep at night. Prescribed pulv. Doveri, gr. x. to be taken at 7 P. M. and to be repeated in two hours if necessary. He is also taking brandy punch pretty freely, and pil. quiniæ sulph. (gr. ij.) every four hours, with the expectorant mixture above mentioned. His feet are being dressed with lotio plumb. et opii.

7*th*. One Dover's powder has made him sleep all night; intellect more clear this morning; tongue continues dry, but he has no febrile movement. Prescribed sodæ nitrat. ℥ij., morphiæ acetat. gr. i., syrup simp. *ad*. f ℥ij. M. A teaspoonful every four hours, in water.

8*th*. His feet are doing well, and he is quiet and comfortable, but his tongue continues dry and he has no desire for food.

11*th*. Strength gradually failing; tongue still dry, and he declines food. Prescribed sol. potass. chlorat. gr. x. four times a day; milk-punch and eggnog. Prescribed also ol. ricini f ℥j. as his bowels were torpid and had not moved for several days.

13*th*. Much worse; countenance pale, pinched, and anxious; pulse intermits at every third beat. He is also much troubled with phlegm, which produces rattles in his throat.

14*th*. Failing rapidly, and scarcely able to articulate; says he is free from pain and distress; pulse 90, weak, and intermittent; respiration 30; much troubled with phlegm in throat.

15*th*. He continued to sink, and died at 7 o'clock P.M. An autopsy could not be obtained.

His feet, however, were doing well when he died. The ulcers were granulating. The swelling had entirely departed from his left leg and foot. It had likewise quite gone from his right leg, and almost disappeared from his right foot. He laboured under the mistaken idea that the gangrene was entirely due to local causes. He told me, several times, that all the trouble in his feet had been produced by corns.

Comments.—Although no autopsy could be obtained, we have but little doubt as to what happened to this aged patient, since we know what has occurred in analogous cases. In his case the coagulation appears to have simultaneously commenced at several different points in the minute arteries of his feet and toes. He also had advanced senile marasmus, and was very pale. There is good reason to believe that, on account of this marasmus, his blood had become abnormally coagulable. His arteries, also,

were affected with the atheromatous and calcareous degeneration. Besides, his heart-beat was feeble. No wonder, then, that thrombosis occurred in those parts of his body where the arteries were most thoroughly degenerated, where the distance from the heart was the greatest, and where the blood itself would soonest stagnate. No wonder, also, that it began in the capillaries of those remote parts, for it is in these vessels that under such circumstances the stagnation would first appear.

This patient, also, appeared to have venous thrombosis of his lower extremities. The obstruction-symptoms consisted of dark-red congestion and œdematous swelling of his feet and legs, together with enlargement of the small subcutaneous veins from dilatation of their calibre with stagnating blood. The symptoms of venous obstruction did not present themselves until the disease was far advanced; but they were not, at any time, very strongly marked. Finally, he died apparently of thrombosis of the heart and pulmonary artery, as mentioned above; at least the symptoms which are usually produced when the right chambers of the heart and the pulmonary artery are obstructed with blood-clots, were unmistakably present during the closing hours of his life.

Concerning the variety of arterial thrombosis which has its origin in the minute arterial twigs of the extremities and induces gangrene, because it occludes these vessels—the variety of arterial thrombosis which we have just described—we should further remark, that it is met with only in persons who are enfeebled by advanced age, or by exhausting disease, or by premature decay, and therefore has with propriety been called *marasmic thrombosis*, or thrombosis from marasmus.

We shall now proceed to speak of another important variety of arterial thrombosis, namely, that in which the coagulation primarily occurs, not in the terminal branches, but in the main artery of the limb. We shall not be surprised to find that its phenomena differ considerably from those which belong to the variety described above. The following case, originally observed by Dupuytren, affords a good illustration of this *second* variety of arterial thrombosis:—

CASE III. *Gangrene of right foot, leg, and thigh; death; autopsy; thrombosis of right femoral, external, common, and internal iliac arteries; right femoral vein also filled with thrombi; vessels near the ham occupied with coagula; viscera healthy, etc.*—A woman, aged 40, of spare but active frame, who had always enjoyed good health, was admitted into the Hôtel-Dieu, with commencing gangrene of the right leg, July 15, 1832. She said she had recently suffered from cholera; but, on being questioned, the only symptom was violent cramp in the right leg. A dull pain was also felt in the right iliac fossa; it extended first along the inner side of the thigh, and then along its posterior aspect to the calf of the leg, and so on to the sole of the foot and toes. The next symptoms in these parts were a stinging sensation and lancinating pains, succeeded by a burning feeling. After this, and about ten days before admission to the hospital, the foot became cold and purple in spots; the pain also became so severe as to prevent her sleeping. On examination, the right leg was found swollen to double its natural size up to the knee. The skin was also

tense and shining, and of a purple hue, which increased in intensity towards the toes; and the discolouration was so disposed as to impart a mottled appearance to the limb. There were some points of vesication, and the loss of sensibility corresponded to that of temperature. The pulsation of the femoral artery in the affected limb could scarcely be detected, so indistinct and feeble was it; and this vessel appeared as if converted into a hard and almost incompressible cord throughout its entire course.

The patient was repeatedly bled, and the limb enveloped in a poultice. The mortification, however, spread upwards, and ultimately involved the whole thigh. She died thirty-five days after admission to the hospital, and forty-five days after the gangrene first appeared.

Autopsy.—The body was much emaciated. The gangrenous limb was still much swollen, and the skin dark, hard, and dry. Three large eschars presented themselves on the right side and back of the pelvis, extending from the iliac crest across towards the left side. In the middle of the thigh the femoral artery was contracted, but in other respects had a normal appearance; it was, however, filled with a filiform, reddish clot, which seemed as if it had been formed after death. Near the crural arch the artery resumed its natural calibre, but was hard, incompressible, and occupied by a clot, which was red on the surface, and slightly adherent to the lining membrane of the vessel; in its centre it was gray, and seemed to be formed of discoloured and broken-up fibres. This condition existed as high as the common iliac trunk, and even extended a little into the left iliac, but without obliterating it. The right internal iliac artery was also obstructed by a similar clot. The femoral vein of the same side was occupied by a reddish clot. The vessels on the left side, together with the aorta and the heart, were nearly empty. The capillaries between the gangrenous and sound parts were highly injected. The skin of the mortified leg was dark and hard, like parchment; the subcutaneous cellular tissue was of a grayish-yellow colour; the muscles and nerves were bright-red; the vessels near the ham were filled with clot similar to that in the thigh, but lower down they contained a reddish serum. The deep areolar tissue was infiltrated with this serum, and at some parts sloughy; the bones were pale.

The viscera were healthy, except an increased redness of the small intestine. (*Dupuytren on Lesions of the Vascular System, etc.*, pp. 20–22, Sydenham Soc. Translation.)

Comments.—This patient was not old, being only 40 years of age. The disease ran a comparatively short course, inasmuch as it terminated fatally in forty-five days. The symptoms were very strongly marked both in respect to the gangrene and the pulseless and cord-like condition of the femoral artery. The diagnosis, during life, was therefore easily made. The popliteal, common femoral, external, internal, and common iliac arteries, were completely occluded with old thrombi, and the gangrene was correspondingly extensive. The clots in the popliteal and common femoral, however, were the oldest. This circumstance shows that the coagulation began in relaxed portions of the artery, at the bend of the knee and the fold of the groin. The femoral vein also was occupied by a reddish coagulum. The viscera were healthy.

The autopsy afforded no evidence that the coats of the thrombosed arteries were inflamed. They did not exhibit inflammatory reddening, nor inflammatory thickening, nor inflammatory softening. Indeed, it is expressly stated that "in the middle of the thigh the femoral artery was contracted, but in other respects had a normal appearance." The contracted appearance of the femoral artery was probably due to the absence

of vascular tension which followed the blocking up of its canal at the groin and knee; for, when this occurred, the middle part of the vessel became, as it were, cut off from the general circulation. The autopsy in this case clearly showed that the causation of the thrombosis could not be ascribed to arteritis.

Concerning this variety of arterial thrombosis we can give the following general description. It is most frequently met with in the aged, but is not confined to that class of persons as the case which we have just related abundantly shows. It is characterized by the occurrence of gangrene at once over a large part of an extremity; for example, over the foot and leg as high as the calf or the knee. This takes place as follows: In the chief artery, say the femoral, at the flexure of the groin, or in the hollow of the knee, a firm clot forms out of the blood, and adheres to the wall of the vessel by rough prominences on the internal coat, due to precedent atheromatous disease, or else forms in sac-like dilatations of the artery, and gradually grows by apposition of new fibrin, so as not only to fill the calibre of the artery, but to plug up the whole peripheral end of the vessel, and even a portion of the central end, with fibrinous clot. The consequence of this stoppage of the main artery by a thrombus forming on its wall, which gradually arrests the collateral circulation also, is usually gangrene of the whole foot and part of the leg. (*Billroth.*) This gangrene is dry or moist, according to the rapidity with which the clot has been developed, and according to whether the corresponding veins are occluded with coagula or not. Sometimes it is possible to trace the growth of the thrombus by the spread of the gangrene, as it was in the case which we have just related.

We shall now proceed to describe a *third* variety of arterial thrombosis, which also possesses a good deal of importance. In this variety the obstruction of the circulation begins with the lodgment of an embolus, which has been brought in the blood-stream from some more or less distant part. Around this obstacle the blood coagulates until the canal of the embolized artery becomes completely filled up; and, by extension of the coagulating process, the collateral channels likewise become occluded with blood-clots. Then gangrene of the parts which depend upon the occluded vessels for their blood-supply, ensues. This variety is sometimes called *secondary arterial thrombosis.* The following case related by Romberg affords a good illustration of it. This case also possesses great importance in other particulars.

CASE IV. *Cardiac disease; secondary thrombosis (from embolism) occurred at different times in the popliteal, femoral, and iliac arteries of both sides, in the left brachial, and probably in some of the cerebral arteries; attack came on suddenly with great cerebral disturbance and hemiplegia of left side, etc.; gangrene of both feet and legs supervened; death; autopsy; arteries above-mentioned obstructed with embolia and coagula; secondary arteritis; hypertrophy and mitral disease of heart.*—A merchant, aged 29, who generally enjoyed

good health, after an indisposition of a few days, suddenly, in the night of *October* 20, 1844, complained of a burning sensation in the lower extremities, which rose upwards to the head, where it was converted into an overpowering sensation of hissing and boiling; he was almost deprived of consciousness, but he was just able to call for assistance. A physician was brought, who found him with a livid, bloated countenance, and speechless; the left side was almost powerless, the head confused, and the pulse low; on being raised the patient vomited. A venesection was made, and antiphlogistic treatment adopted. Speech returned on the evening of *October* 21*st*; only a trifling pain in the head remained, which was increased by movement. On the following days the pulse was accelerated, the skin hot and dry. He complained of formication in the fingers and sleeplessness. *Nov.* 1. A rigour, followed by heat and perspiration, supervened; and this returned, at irregular intervals, once or twice daily, and also at night. *Nov.* 4. The right foot presented a sense of numbness, which passed off after a few hours under the application of dry friction, but returned on the following day, extending to the middle of the calf, and being associated with coldness, anæsthesia, and difficulty and pain in movement. Dull pains also occurred spontaneously in the deeper-seated parts of the limb. *Nov.* 12. The warmth and sensibility of the limb were gradually restored, but the foot was dragged in walking; the fever continued and the powers were reduced. The patient now also complained of a sense of tension in the left foot, and of a deep-seated, dull pain, which was increased by pressure upon the internal surface of the thigh, and, on the 14th, became very violent. The rigours had left him for a few days, but the fever had risen; sleep was altogether in abeyance, and gave place to delirium. The urine often passed off involuntarily, although the patient felt a desire to micturate. On the succeeding days, violent palpitations of the heart supervened.

Nov. 28. Prof. Romberg was called in consultation. Then the left foot and leg were considerably œdematous; pressure of the finger upon the dorsum of this foot left indentations of a bluish-red colour. Extensive dark sugillation was found on external side of calf. Skin on sole of foot dark yellow in colour, and, towards the toes, thrown into thick folds, as we find it in Asiatic cholera. The temperature was much reduced to above the knee. Sensibility was gone, and Romberg inserted a needle to considerable depth without the patient perceiving it, and without discharging a drop of blood. The leg was paralyzed, and it was only after repeated requests that the patient bent the large and adjoining toes; and, by moving the thigh, slightly rotated the whole extremity. The normal colour and temperature commenced above the knee. No pulsation was to be felt in the popliteal and femoral artery of this (left) limb; pressure upon the latter, just below Poupart's ligament, excited violent pain. With the stethoscope Romberg heard pulsation above the navel, but none below. The pulse was also imperceptible in the left radial artery. The motor power of this hand and arm were impaired; the patient himself complained of weakness in this limb, but no deviation in its sensibility and temperature were observed. The pulsation of the left carotid was less than that of the right.

The right leg, which was bent at the knee, presented a moderate warmth. Its sensibility was very obtuse, so that the patient was unconscious of contact unless he saw it. Its motility was impaired, though not to such an extent as in the left foot. The femoral artery pulsated; at the popliteal, pulsation was not to be discerned.

The heart's impulse was accelerated and strong; a distinct vibration was communicated to the hand. The first sound of the heart was marked by a loud bellows murmur, which was synchronous with the pulse. The pulse was 120, and compressible; the skin dry and warm; respiration somewhat accelerated, without a sense of dyspnœa; the tongue moist, thirst moderate, the face sunken and pale, the lips especially so; the urine often passing off involuntarily. Consciousness proved unembarrassed in conversation, but the patient had no perception of his disease; on the contrary, he enjoyed a certain euphoria, and fell into pleasing deliria as soon as he was left to himself. Romberg advised that a reducing plan of treatment should no longer be employed; he also advised

the application of aromatic fomentations to the lower extremities, friction with gray ointment to the thighs, and the exhibition of broth and wine.

During the next four days the symptoms of mortification gradually became more marked in both lower extremities; his delirium deepened, and his strength declined. *Dec.* 3. The superficial veins of left limb are felt like broad cords, passing equally through the ecchymosed portions: the œdema is less and softer. The femoral artery feels like a hard cord, and is tender when touched. *Dec.* 5. Gangrene rapidly spreading in both limbs, being of the moist variety in the left limb, and dry in the right. Stupor ensued, and at 4 A.M. on the 6th, he died.

Autopsy, by Prof. Froriep, thirty hours after death. Pleural cavities contained a small quantity of a reddish-coloured serum. Both lungs perfectly healthy, excepting cadaveric stasis in the lower lobes. Pericardium much distended, and filled with five or six ounces of fluid. Heart enlarged, and left ventricle hypertrophied. A pale-red firm coagulum was found in the right ventricle; a larger coagulum was found in the left, and it contained more cruor. A rounded excrescence of a yellowish colour lay between the two flaps of the mitral valve, attached to the upper one, and an inch and a half in length, and almost blocking up the auriculo-ventricular orifices. The aortic valves and the inner surface of the ventricle were normal. In the arch of the aorta there were small cartilaginoid indurations; there were some also along the thoracic aorta, causing prominent longitudinal striæ upon the internal coat.

Stomach and intestines much distended by gaseous contents. In the tissue of the spleen, beneath the peritoneal investment, there were three plastic exudations of a whitish colour and of trifling extent.

In the abdominal aorta there was, close to its division into the common iliacs, a firm pale-red coagulum, which completely closed up the artery, and adhered firmly to the inner coat, which was smooth and pale. The plug was continued into the two iliacs, and terminated in a fine conical point. Where the left internal iliac passes off a similar formation was found, of the same density but of a lighter colour. The left external iliac was blocked up with a thinner clot containing much cruor, up to the point at which it passes under Poupart's ligament; it was easily detached from the lining membrane, which itself was thickened, reddened, pultaceous, and could easily be separated from the middle coat. The middle and external tunics were also thicker and more lacerable than they are in the normal condition. There was plastic exudation between the coats, which could easily be perceived in the tissue surrounding the arteries. The latter was strongly inflamed below Poupart's ligament, and the lymphatic glands of this region were much swollen and reddened. At the point where the profunda femoris is given off, there was a firm plug, which could only with difficulty be separated from the dark-red inner membrane; a prolongation of this clot extended into the profunda, so that the coagulum resembled a tooth with two fangs. The further course of the femoral was filled with a thinner coagulum, containing more cruor, and its internal coat was villous, rough, and much reddened. Lower down it was free; but at the point where it passes through the adductor magnus, it was again firmly closed by a pale plug, the inner coat being much reddened, pulpy, and swollen.

The vena saphena of the left thigh was narrow and contracted, and its lining membrane pale and corrugated. A trifling exudation of lymph was effused into the cellular tissue surrounding it, which was much inflamed. The crural and common iliac veins were normal.

The left brachial artery was obstructed by a firm pale-red plug, immediately above its division into the radial and ulnar, which closely adhered to the inner coat, and extended about half an inch into each branch. These were narrow, and their inner coat was somewhat rough and reddened. The radial contained no coagulum in the rest of its course. The left subclavian and carotid arteries were normal.

Forty-eight hours after the post-mortem Prof. Müller made a more minute examination of the heart and arteries.

The tumour found at the mitral valve exhibited a fibrous structure on section, and proved under the microscope to be made up of fibres of cellular tissue. It was seated beneath the endocardium, which extended from the auricle over the

tumour into the ventricle. The yellowish-white coagulum in the lower portion of the crural artery was impregnated with a fluid of the same colour, in which the microscope showed numerous corpuscles, that, however, did not correspond to pus globules. The arterial coagula were covered by a thin layer of plastic lymph, which in many parts also invested the inner coat of the arteries. This arterial tunic had become darker since the autopsy; it was extensively detached from the middle coat, and in some parts a distinct layer of lymph was found between them. (*Romberg's Manual of the Nervous Diseases of Man*, pp. 238–245, Sydenham Soc. Translation.)

Comments.—This case possesses very great value on account of the light which it sheds upon the subject matter of this essay. Besides, three renowned professors in the University of Berlin, Romberg, Froriep, and Müller, were engaged in its elucidation. The foregoing account of it has been prepared by condensing the original narrative as much as could well be done without seriously impairing its value.

It is, however, to be regretted that the cerebral arteries were not examined at the autopsy, for several symptoms, such as the hissing and boiling noises in the patient's head, the temporary loss of consciousness, and of power in his left side, etc., indicate that they were involved at the commencement of the disease; "while the delirium occurring during its course, the absence of subjective symptoms to be expected where there was so much impediment to the circulation in the heart, the trifling character of the pain, and the entire misconception on the part of the patient of the nature of his malady, show that the brain was in an abnormal condition."

Romberg also remarks: "The coexistence of the disease in the central organ of the circulation and in several arteries is an essential feature. Still, the existence of advanced organization in the deposit on the mitral valve appears to prove that it originated in the heart." . . . . "I do not venture to determine," he continues, "the relation which existed between the endocarditis of the mitral valve and the inflammation of the crural artery, which took place on the fifteenth day in the right, and subsequently in the left leg; it certainly was not by continuity of the inflammatory process, and its extension from the left ventricle; the healthy state of the thoracic and abdominal aorta, is opposed to this view. Did a similar process," he asks, "obtain to that occurring in phlebitis [venous thrombosis]? Might there have been a detachment and propulsion of portions of the exudation matter deposited in the heart, which, being arrested in some of the arterial channels, acted like foreign bodies, and excited coagulation of the blood and inflammation." (*Ibid.* pp. 245, 246.) That which Romberg hesitated to assert, twenty-five years ago, later investigations have enabled us to declare with certainty. The products of endocarditis, in this case, were washed off from the cardiac valves by the blood-stream and carried into the arteries of the extremities, where they lodged and induced the occurrence of secondary thrombosis in the way already described. They also induced the occurrence of secondary arteritis, the consequences of which were very well shown at the autopsy. Indeed,

the presence of thrombi in the arterial canals may, under favorable circumstances, excite an inflammation in the arterial tunics as readily as the presence of blood-clots in the connective tissue may, under similar circumstances, excite an inflammation in that structure. In both situations the coagula act as foreign bodies.

Embolism of the arteries of the extremities, however, derives most of its importance from the fact that it induces secondary thrombosis. If, in cases where embolia lodge in these arteries, the blood did not coagulate around them so as to fill up the arterial canal, and if these coagula did not by extending themselves block up the collateral channels also, then the limb would generally be saved from gangrene by the establishment of a collateral circulation. Cruveilhier's experiments, to which we have already referred, clearly showed a complete occlusion, not only of an arterial trunk, but likewise of its ramifications (restraining all afflux of blood, whether direct or collateral, to the affected part), to be indispensable to the establishment of gangrene. When embolism occurs in the arteries of the extremities, just such a supplementary occlusion is brought about by the secondary thrombosis which it induces.

In describing the clinical relations of thrombosis of the arteries of the extremities, we must next mention the several diseases in connection with which it has been found to occur. They are several in number; and, as far as practicable, we shall present examples illustrating each of them.

1. *Puerperal Gangrene.*—In a very large proportion of the cases where gangrene of the extremities occurs in the persons of lying-in women arterial thrombosis plays a very important part in its production. It may be safely stated, in a general way, that, excepting traumatic lesions, arterial thrombosis constitutes the proximate cause of puerperal gangrene in nearly every instance. Dr. Barnes has related a case in point which occurred in the wife of a surgeon, aged 31. Twelve days after delivery it was noticed that pulsation had ceased in the right posterior tibial artery. On the next day she complained of having most excruciating pain in the ankle and calf of the same leg. Early on the following morning her leg between the calf and ankle was found to be in a state of gangrene, and seven hours afterwards she died. Dr. Barnes says: "No post-mortem examination was made, but the history of this painfully interesting case can leave little doubt as to the cause of the fatal issue. A coagulum had obstructed the right external iliac or the femoral artery. Mortification had ensued as effectually and as rapidly as if the artery had been ligatured." (*Obstetrical Transac.*, vol. iv. pp. 31–33.)

Dr. Barnes also collected fifteen cognate cases, which he arranged in tabular form and presented in the same communication to the Obstetrical

Society of London. In some of them the vascular occlusion was effected by *primary arterial thrombosis*, as, for example, in the following instance:—

"A primipara had a protracted labour; two weeks afterwards admitted to the Edinburgh Infirmary with pain and acute gangrene of both legs; death in three or four days."

Autopsy.—"No disease of heart An inch and a half above bifurcation of aorta, a fibrinous plug completely occluded artery. It was prolonged along common iliacs and left internal iliac. Mass firmly adherent to walls of aorta, which were thickened. Inferior extremities of both plugs in external iliacs did not terminate abruptly, but were continued as a lymphy layer over arterial wall for an inch. Below, the arteries were healthy. Veins healthy." (*Ibid.* p. 37.)

In other cases the vascular occlusion appears to have been commenced by the lodgment of an embolus brought from the chambers of the left heart or from some other part of the arterial system. Then *secondary arterial thrombosis* has supervened and produced extensive occlusion of the embolized artery with gangrene of the corresponding parts. In puerperal subjects thrombosis of the arteries of the extremities is frequently, perhaps generally, accompanied by thrombosis of the corresponding veins. In this class of subjects arterial thrombosis generally occurs only in the lower extremity. It is, however, occasionally met with in the upper extremity, and sometimes in the arteries of the brain. The remarkable tendency to coagulate which the blood of puerperal women exhibits should doubtless be rated very high among the causes of puerperal thrombosis.

2. *Rheumatic Gangrene.*—Acute rheumatism tends to produce arterial thrombosis in two distinct ways: first, by occasioning an alteration in the composition of the blood whereby the quantity of fibrin contained in it is considerably increased, and the coagulability of it is greatly augmented; and second, by inducing an inflamed state of the endocardium, so that embolia can be washed off from it by the blood-stream and carried into the arteries of the extremities where they may cause a secondary thrombosis with all its destructive consequences, just as they did in Case IV., although that was not an instance of acute rheumatism. The cardiac embolia in that case, however, induced the occurrence of secondary arterial thrombosis and gangrene in precisely the same way as they would have done if they had originated in an attack of rheumatic endocarditis. The following is an example of so-called rheumatic gangrene: A young man, aged 23, had a severe attack of acute rheumatism, accompanied with pericarditis, much effusion, and much embarrassment of the circulation. Gangrene of the foot ensued, for which he was treated in St. Bartholomew's Hospital in 1857. The mortified part separated, and the stump of the foot healed; but the patient suffered so much from the imperfect nature of the cicatrix, that he again presented himself for admission, being desirous of having the foot removed by amputation, which operation was accordingly performed. (*Holmes's System of Surgery*, vol. i. p. 171, 2d ed.)

The next observation is important, and may with propriety be presented in this connection.

MÖLLER (*Berl. Klin. Woch.*, 1869. 134) gives an account of a case of so-called peliosis, or purpura rheumatica, which clearly establishes the connection of this disorder with arterial thrombosis and embolism. It occurred in a man, aged 46, who had suffered from acute articular rheumatism in the early part of 1868. In the spring, a short systolic blowing murmur was heard over the origin of the aorta, without any disturbance of function, or enlargement of the heart. About the same time small hemorrhagic spots appeared, off and on, with sudden increase of pain, on different parts of the skin of the extremities. Towards the end of the summer these appearances became more frequent, and extended to the deeper-lying parts; on the hands and feet, especially, were developed very suddenly hot, very painful, more or less red, circumscribed swellings, in the centre of which could be felt a hard, hemorrhagic knot, which, from its superficial position, shone with a bluish colour through. In *October*, the right hand was attacked with paresis, and painful dulness of feeling; the pulse had disappeared in the radial, and was almost gone in the ulnar artery; 1″–2″ below the aponeurosis of the biceps could be felt, deeply, a cord-like, very sensitive tumour. On *Dec.* 8, without any warning, the patient was attacked with headache, delirium, and coma, and died in a few hours.

The right arm only was examined, post-mortem, though Möller considers the fatal result due to embolism of a cerebral artery. The brachial artery, just above its bifurcation, was converted into a solid cord, firmly blended with the surrounding connective tissue, in which were visible the remains of hæmatoid crystals. (*New Sydenham Soc. Retrospect*, 1869–1870, pp. 99, 100.)

Comments.—It is probable that in this case the attack of acute articular rheumatism which occurred in the forepart of 1868 was attended with endocarditis of the left ventricle, especially about the root of the aorta; that subsequently small clots of fibrin were, from time to time, washed off from the endocardium by the blood-stream, and, being carried into the subcutaneous arterial twigs where they lodged, produced secondary thrombosis and hemorrhagic infarctions in those situations, analogous to those infarctions which not unfrequently occur in the superficies of the lungs, in cases of embolism of the pulmonary artery; that in October the right brachial artery became plugged with an embolus, around and beyond which a secondary thrombus was formed in the stagnant blood; and that on Dec. 8 the patient was suddenly stricken down with cerebral embolism, of which, in a few hours, he died. In all these various attacks of embolism and secondary thrombosis, the embolia appear to have proceeded from the left ventricle of the heart, and to have originated in the local products of the rheumatic endocarditis.

It is interesting to note that the occlusion of the brachial artery with coagula was attended with paresis, and a painfully dull sensation in the right hand; that the establishment of a collateral circulation prevented the occurrence of gangrene in this part; that the occluding clots excited inflammation in the coats of the brachial artery, which was denoted by tumefaction, extreme sensitiveness under pressure, and by the development of new connective tissue; and that at the autopsy the affected portion of the artery was found converted into a solid cord, containing the remains of

hæmatoid crystals, and firmly blended with the surrounding connective tissue.

3. *Ulcerative Endocarditis.*—When this disorder occurs there is always very great danger that secondary thrombosis will be produced in the arteries of the extremities, together with gangrene of the parts which derive their blood-supply from the occluded vessels. The following case, which was originally related by Hodgson, affords a fair example of the relation that exists between this affection and arterial thrombosis of the extremities.

CASE V. *Ulcerative Endocarditis, with typhoid symptoms; circulation of blood in arteries of right leg arrested; death; autopsy; besides the cardiac lesions, thrombosis of the right femoral and profunda artery was found.*—A young man, aged about 18, six weeks before death was afflicted with violent headache and constant vomiting. His pulse was unusually strong and hard, and a quick vibrating pulsation was observed on left side of abdomen. The right leg was cold, and no pulsation could be discovered in its arteries. The action of the heart, also, was occasionally very indistinct. He was extremely feeble, his tongue and lips were covered with sordes, and he died like one destroyed by typhus fever.

Autopsy.—Heart natural in size, with cavities of the usual proportions, and a healthy muscular structure. Two semilunar valves of the aorta, however, were lacerated, and from their edges sprouted numerous wart-like excrescences. Immediately below these valves was an extensive ulcer which penetrated deeply into the walls of the left ventricle, at the root of the aorta. A small quantity of pus was found beneath the edges of this ulcer. The internal coat of the aorta was marked with numerous white specks. The right femoral artery, together with the profunda, at the origin of the latter, was filled with a firm white substance, similar in structure to that of the excrescences on the aortic valves. This substance adhered firmly to the sides of the vessel, which were healthy in that situation, but the cavity of the femoral, and likewise of the profunda artery, was obliterated by it. (*Hodgson on the Diseases of Arteries*, etc., pp. 18, 19. London, 1815.)

Comments.—Hodgson calls the substance with which the right femoral and profunda arteries were occluded in this case, a "fungous growth;" but in all probability it consisted mainly of a decolorized thrombus, or fibrinous coagulum, and did not belong at all to the category of morbid growths. Moreover, the white substance which our predecessors occasionally found adhering to the lining membrane of arteries thought to be inflamed, and which they supposed to be "effused lymph," doubtless consisted only of coagulated fibrin which had been deposited from the blood itself upon the roughened surface of that membrane. This, in all probability, obtained in the solitary case of arteritis that is related by Hodgson. He says, "The effused lymph was very intimately connected with the internal coat of the vessel [the thoracic aorta], and a plug of it had extended into the left subclavian artery, and nearly obliterated the cavity of that vessel." (*Ibid.*, p. 5.) In that case the coagulum or thrombus appears to have been prolonged until it reached some distance into the left subclavian artery. This result, which Hodgson considers to have been produced by the exudation of fibrin from the lining membrane of the aortic arch, in

consequence of its being the seat of an adhesive inflammation, was in reality due to thrombosis.

It is probable that the obturating process, in the case related above, began with the lodgment of cardiac embolia in the common femoral artery. Afterwards, all the blood which stagnated in its vicinity coagulated, and thus by secondary thrombosis the canal of the femoral and profunda arteries became completely filled up or obliterated.

4. *Asiatic cholera* sometimes lays the foundation for the occurrence of arterial thrombosis and gangrene of the extremities. The following case is in point.

CASE VI. *Thrombosis, probably secondary, of iliac, femoral, and hypogastric arteries, following cholera; gangrene of the corresponding limbs; death; autopsy.*—Dr. Bourdon has related (*l'Union Médicale*, i., 1867, p. 250) the following case: The patient was a dressmaker, aged 22, who had led a rather fast life, but had never been ill until recently, when she was seized with cholera while in the country. Anxious to return home, she travelled a long distance, and that night was extremely breathless and coughed much, for after the cholera she had been attacked with some disorder of the lungs. Next day she was in much the same state, but the day following she was seized with coldness and extreme pain in the lower limbs, resembling that of cholera. They rubbed her legs, but these were flaccid, immovable, and insensible to friction. Next night she was much the same, only she perspired abundantly. The left leg was colder than the right, but she no longer complained of either. The right limb could hardly be moved, but it was quite warm, and the beats of the popliteal could be felt. Then gangrenous spots were discovered on its inner aspect. The left limb was movable only by the pelvic muscles; it was deadly cold, and of a violet colour; but there was no smell and no phlyctenæ. The arterial beats could not be felt. She sank on the morning of the 9th, having entered hospital on the 7th.

At the *autopsy*, the mitral valve was found lined with warty vegetations, in some parts connected by strings of fibrin, and having fibrinous clots adhering to them, one of which extended into the aorta. One of the aortic valves also was covered with fibrin. Some vegetations, too, existed on the right side of the heart, and clots adhered to them likewise. The right iliac (common) was completely obstructed by a clot (thrombus) which extended into the hypogastric and external iliac. The central parts of this clot were apparently old. The left iliac artery was clear in its upper part; but the hypogastric contained a clot, as also the superficial femoral and the lower portion of the iliac. The other parts of the body were healthy. (*New Sydenham Soc. Retrospect.* 1867–8, pp. 144, 145.)

Comments.—This patient passed through an attack of cholera, and in consequence thereof her blood acquired an abnormal tendency to coagulate, that is, she became particularly disposed to the occurrence of thrombosis. She also had warty excrescences on the mitral valve of the heart, and in connection with them cardiac thrombi were formed, some of which were exposed to view by the post-mortem examination. It is probable that one or more of these soft coagula were swept away from the left ventricle by the blood-stream, and, being carried into the common iliac artery of the right side, lodged there. This embolus obstructed the blood-flow and caused more or less stagnation in the common, internal, and external iliac arteries of that side. Secondary thrombosis then occurred in those vessels.

The newly-formed coagulum obstructed completely the common iliac and extended likewise into the external and internal iliacs. The central part of this clot was found to present an old appearance at the autopsy just as it would be likely to do if it had originally been brought from the left ventricle of the heart. Thrombosis also occurred in the lower part of the common iliac artery of the left side; likewise in the internal and external iliacs, together with the common and superficial femorals of the same side.

These thromboses induced gangrene of both lower extremities by cutting off or seriously diminishing the blood supply of those parts. The gangrene, however, was much more extensive in the left limb than in the right, and this circumstance shows that the occlusion of the cruro-inguinal arteries with blood-clot (thrombus) was much more complete on the left than on the right side. The gangrene soon induced septicæmia, and the septicæmia in turn quickly occasioned death.

5. *Pleuro-pneumonia* may give rise to embolism and secondary thrombosis of the arteries of the lower extremity, with gangrene of corresponding extent, as it did in the following instance:—

CASE VII. *Embolism and secondary thrombosis of popliteal artery following pleuro-pneumonia; gangrene; amputation of the thigh; recovery.*—A. B. admitted to the Royal Naval Hospital, Yokohama, Japan, *October* 3, 1867. It appeared that, on *September* 24*th*, he was attacked with inflammation of the right lung, that on *October* 1*st* he complained of severe pain in the left leg, and that a small firm tumour was discovered in the popliteal space obstructing the circulation. On admission his countenance was anxious, and indicative of suffering; breathing hurried and oppressed. Never had rheumatism. Appeared in very indifferent condition, and had evidently lost much flesh. Pulse 100, small; tongue coated; bowels regular; skin hot. There is considerable bulging of the right side with other signs of pleuritic effusion; also consolidation of lower lobe of right lung. Complains of intense pain in the left leg, nausea, cough, inability to sleep, thirst, and want of appetite. Heart's action normal, sounds healthy. Has no feeling in left leg below knee, and the part is cold and shrivelled. Toes have a dark sloughy appearance. There is a firm tumour, as mentioned above, completely obstructing the circulation below, and the impulse in the femoral artery is considerably less than in that of the other extremity.

On *October* 6*th* the leg was black and sphacelated; a line of demarcation had formed immediately below the knee-joint; chloroform was administered and the thigh amputated about the junction of the middle with the upper third. There was no bleeding from the large vessels, and before applying ligatures a long clot was drawn out of each. He recovered and left the hospital for England, *April* 14, 1868, in perfect health. (*Lancet*, 1868, vol. 2 p. 390.)

In this connection the following case may be found to possess some interest:—

"A man, aged 54, was admitted into St. Bartholomew's Hospital, Febnary 22, 1839, with mortification of the third and fourth toes of right foot; œdema of both legs; cough and expectoration of mucus tinged with blood. The countenance was of bluish aspect, as if there were obstruction in some part of the circulation. The extremities were cold, and the pulse feeble and at times scarcely perceptible. The man died the following day, and his body was removed without examination." (*Holmes's System of Surgery*, vol. i. p. 171, 2d ed.)

Mr. WILKIN has related a very interesting case of embolism, and perhaps secondary thrombosis, involving the left brachial artery, and occurring during convalescence from *measles*, in the *Lancet* for 1868, vol. ii. p. 599:—

The subject was a lady, aged 52, of delicate fibre, and the mother of twelve children, with a family history of gout on both sides, and for some years occasionally subject to slight fainting fits; otherwise healthy. On *March* 18, 1867, she had a sharp attack of measles, coupled with an unusual amount of bronchitis and catarrhal symptoms. A loud systolic murmur was heard all over the cardiac region. She did well, however; and on the 25th, being quite convalescent, took a warm bath, in which she remained about three minutes. After completing a hasty toilet and walking into the next room, she suddenly experienced the most acute pain in her left arm, extending from above the elbow to the wrist, became very faint and giddy, vomited several times, and "felt very bilious and unable to talk." Mr. W. ordered stimulants with perfect rest, and saw her again in the evening, when he found the left arm pulseless, and much cooler than the right, and diagnosed embolism of the brachial artery at its bifurcation. She was placed in bed and the arm incased in cotton-wool. She complained much of vertigo; but slept soundly during the night. On the following morning the limb was quite blanched, almost cold, and somewhat shrunk. Dr. Walshe saw the case in consultation, and corroborated the diagnosis. An anodyne liniment was prescribed for the very severe pain felt in the hand and arm, and ammonia and potash were given internally as solvents of any coagulated fibrin that might be in the blood. Fortunately, the vitality of the limb was preserved through the anastomosing branches. The progress was satisfactory until *April* 13th, when the gout showed itself in the same hand, and resisted for a time every effort to dislodge it. However, on *May* 7th, she was much improved, and could use the hand a little. The arm was still pulseless, but of its natural size and temperature. She went to the continent, and remained there six months, during which time she lost all the nails of the affected hand. On her return the pulse could be felt in the wrist, but it was not so full as in the right one. Much of the former strength and usefulness of the limb had, however, been regained.

6. *Typhus*, and other forms of *continued fever*, are sometimes succeeded by arterial thrombosis and gangrene of the extremities.

Mr. BATHO records a case of *arterial thrombosis and gangrene following continued fever*, which occurred in the person of a soldier, aged 27, of pale and thin appearance, and temperate habits. He had been admitted into hospital several times for syphilis, but had never had any serious or acute disease. His left leg became gangrenous, and no pulsation could be felt in the anterior and posterior tibial arteries, whilst the common and superficial femoral arteries could easily be felt to beat. Amputation of the thigh was performed, and it was noticed that the popliteal artery was partially occluded by thrombosis. This patient's symptoms, when first seen, differed in no perceptible respect from those of common continued fever, and consequently his disease was returned as such. Twelve days later, however, the occurrence of arterial thrombosis was diagnosed, and the subsequent progress of the case verified this opinion. It was thought that the obstruction-symptoms did not depend upon embolism, for there was no heart-disease; but, upon local stasis and coagulation of the blood in the arteries of the legs, resulting in part from a most feeble heart-action, and in part from an abnormal condition of the blood itself. Both legs were affected, and for a time in a condition resembling that produced by frost-bite, but the right one ultimately recovered. In the left leg there was also a nodulated condition of the lymphatics of the calf, such as is met with in frost-bite. That such a train of symptoms should have occurred in a semi-tropical climate (Cape of Good Hope), and in a very hot season, is remarkable. It is obvious that exposure to cold had no part in its causation. The patient

recovered well and completely after the operation. (*Lancet*, 1870, vol. i. pp. 113, 114; also, *New Sydenham Soc. Retrospect*, 1869–1870, pp. 327, 328.)

Dr. MURCHISON has reported a very instructive case of embolism and secondary thrombosis of the iliac, femoral, and other arteries, with primary thrombosis of the femoral veins, occurring in a woman, aged 45, affected with typhus fever, who exhibited œdema and gangrene of the lower extremities for some considerable time before death. (*Transact. Patholog. Soc. London*, vol. xvi., 1865, pp. 93–95.)

This case is entitled embolism of the iliac, femoral, and other arteries, and thrombosis of the femoral and popliteal veins, etc.; but judging from the published description it appears to have, in reality, been an instance of arterial as well as venous thrombosis. The arteries involved were the last two inches of the aorta, the common and external iliacs of both sides, the left internal iliac, the left common and superficial femoral, the right common femoral for an inch and a half, and the right renal artery. The bare statement of the extent to which the arteries were occluded is sufficient to show that something more than embolism was engaged in the occluding process.

We must here remark, that the œdematous tumefaction of a persistent character which is not unfrequently, and the gangrene which is occasionally, met with in the lower extremities, as sequelæ of typho-malarial, typhoid, and typhus fever, are generally due to occlusion of the vessels belonging to the affected part with coagulated blood. Occlusion of the veins produces œdematous swelling, occlusion of the arteries, gangrene, and of both combined, wet gangrene. These accidents sometimes occur in the upper as well as in the lower extremities of fever patients.

7. *Constitutional syphilis* is occasionally attended with thrombosis of the arteries of the extremities. In Mr. Batho's case related above, it is possible that the thrombosis of the popliteal artery was due to syphilis instead of continued fever, for this patient had several times been under treatment for the first-named disease. When we come to speak on thrombosis of the cerebral arteries, we shall relate or refer to a considerable number of cases in which the thrombosis had, in all probability, a syphilitic origin; and we infer that, if there is such a disorder as syphilitic thrombosis of the arteries of the brain, there is also such a disorder as syphilitic thrombosis of the arteries of the extremities. It is not improbable that the following case belongs to the last-named category:—

Dr. HEWITT, at a meeting of the N. Y. Pathological Society, March 13, 1872, presented a specimen of gangrene of the foot, removed by amputation from a man, aged 32, who had entered the Charity Hospital six weeks before, suffering from warty vegetations of the glans penis. The operation for phimosis was, after a time, performed, and the warts were

removed. He left the hospital the same day, and walked a great deal while in the city. The result was, that a good deal of inflammation was set up, and he was forced to re-enter the hospital within the succeeding twenty-four hours. This inflammation was followed by extreme fever, characteristic of pyæmia, and the prostration was so great as to threaten immediate death. The administration of large doses of quinia was attended with a good effect. Coincident with this improvement was a cessation of pulsation in the anterior and posterior tibial arteries of right leg. Shortly after this, gangrene of the toes presented itself, and a distinct line of demarcation was formed at the metatarso-phalangeal articulation. In view of the fact that the posterior tibial artery did not beat, that a large portion of skin was discoloured, and that there was a good deal of tenderness and puffiness about the ankle-joint, it was considered prudent, on consultation, to perform Syme's operation; which was accordingly done by Dr. Fortun, the assistant surgeon. Subsequently, the case did well. The diagnosis was thrombosis of the posterior tibial artery. The patient had frozen his foot five or six years before, and this circumstance may have had something to do with the induction of gangrene. Dr. Hewitt considered Syme's operation preferable to Chopart's and Lisfranc's, in cases such as the above. (*Medical Record*, vol. vii. p. 156.)

Comments.—It is not improbable that this man also had constitutional syphilis, and that this disease had something to do with the occurrence of arterial thrombosis and gangrene in his foot. We can readily conceive how constitutional syphilis may induce arterial thrombosis. Lancereaux and others have shown that the arteries of syphilitic subjects are liable to become the seat of a new formation (gummy tumour) deposited in the thickness of their walls. On this point, Lancereaux says: "That there is a connection between this lesion and syphilis is very probable. We are, as it appears to us, the more authorized to admit this connection because the arterial neoplasm does not differ notably, in the cases quoted, from the morphological product by which syphilis manifests itself in the other parts of the body." (*Lancereaux's Treatise on Syphilis*, vol. i. p. 403, New Sydenham Soc. Translation.) Now the presence of gummy tumefaction in the walls of arteries belonging to the lower extremities, or any other part, would naturally cause more or less contraction or narrowing of the arterial canal at the seat of the swelling; and this circumstance would favour the formation of a thrombus in the same situation. This, then, is one way in which constitutional syphilis may tend to induce arterial thrombosis. But it may also tend to induce the formation of thrombi in still another way, namely, by increasing the coagulability of the blood itself, which it does mainly by occasioning cachexia, lymphangitis, adenitis, and leucocythæmia. In all cases such as that related above, it would be well to subject the arteries of the amputated member to a critical examination, in order to ascertain whether the condition of their coats will throw any light upon the etiology of the thrombosis and consecutive gangrene.

8. *Inflammation of the parts surrounding large arteries and veins* may sometimes be attended with thrombosis of these vessels, as seems to have happened in the following instance:—

CASE VIII. *Thrombosis of the right subclavian artery and sudden occlusion of the left subclavian from the free extremity of the clot being forced into it by the blood-stream; thrombosis also, with complete occlusion of the veins on the left side of the neck; thrombosis of the right chambers of the heart; encysted empyema; suppuration among muscles at root of neck, etc.*

Dr. S. FLEET SPEIR exhibited a specimen of the above at a meeting of the N. Y. Pathological Society, February 9, 1870, with the following history:—

Mrs. H., aged 41, the mother of three children, was admitted to the Brooklyn City Hospital, in the service of Dr. H. S. Smith, Jan. 13, 1870. About four months before that she was suddenly taken on the street with pain in the region of the heart and shortness of breath; she was carried home, and, in about three weeks, recovered from the severe symptoms; but a considerable amount of dyspnœa always remained, and it was aggravated every three weeks. During most of this time she had to sit up all night on account of the difficulty of breathing. At time of admission she was greatly emaciated. There was dulness at the lower part of the right side of her chest; left side resonant; crepitant râles on right side, and fremitus increased. Pulse 92, weak and intermittent, a beat being lost in every six. She has not menstruated since she was taken sick.

17*th*. Pulse 100; temperature 98°; there are spots of purpura on some parts of her body, especially the extremities.

31*st*. There was noticed to-day, for the first time, a swelling of a bluish colour and œdematous character, which extended over the left hand and arm together with the lower part of the left side of her neck. The swelling of the hand and arm commenced at 9 A.M., and at 1 P.M., the tumefaction of the neck was noticed. This swelling everywhere pits on pressure. There is no pulse to be found in the radial, brachial, subclavian, and carotid arteries of the left side.

Feb. 2. The tumefaction of the neck has decreased somewhat, but the swelling of the arm has increased. The patient died to-day from asphyxia.

Autopsy by Dr. Speir, about ten hours after death. Sub-arachnoid effusion abundant, and all the ventricles of the brain contain serum; on interior and middle lobes of left hemisphere of cerebrum are two spots of hemorrhage; brain-substance œdematous; cystic degeneration of pineal gland. Between the muscles of anterior part of neck there was a purulent infiltration which extended to a considerable distance on each side of the median line, and low down on the left side of the neck. *All the veins of the left side of the neck were distended with coagulated blood (thrombus).* The veins of the right side were free from clots. The left brachial artery contained a very small thin coagulum about one inch and a half in length, but it did not occlude the vessel. The left subclavian artery did not contain any coagula in its course. *A large thrombus, however, was found in the right subclavian artery, not entirely filling its calibre, but extending into the innominate and aorta; its large extremity passed along the upper part of the aorta, entirely filling up the mouth of the left subclavian, and likewise completely occluding that of the left carotid.* Thus the thrombus, which began on the right side, was prolonged by the current of the blood into the arteries of the left side, and caused a complete arrest of the circulation through them. As already mentioned, the clot on the right side did not entirely occlude the artery. *Masses of broken-down coagulum were found lying loose in the right ventricle of the heart, and also firmly attached to its wall, and imbedded in the meshes of its muscular structure.* The left lung was found to be adherent to the chest in some places, but otherwise

healthy. *The right lung was the seat of encysted empyema.* The thyroid gland was considerably enlarged. The thymus gland was much enlarged, being of the size of an English walnut, flattened a little. From the appearance of the interior of the artery and of the clot in this case, as well as the surrounding purulent infiltration, it was supposed that the formation of the thrombus was due to arteritis. (*Medical Record*, vol. v. p. 39.)

Comments.—This woman had had, if I read her case aright, suppurative pleurisy on the right side, and suppurative inflammation among the muscles of her neck, which were followed by the formation of coagulum in the right subclavian and innominate arteries, in the upper part of the aortic arch, and in the mouths of the left subclavian and left carotid arteries, completely occluding both of them. Moreover, all the *veins* of the left side of the neck also were thrombosed. It was the stopping up of the last-named vessels with blood-clot that caused the œdematous swelling of the left hand, arm, and left side of neck, the œdematous condition of the substance of the left hemisphere of the cerebrum, together with the two spots of extravasated blood on the convex surface of this hemisphere.

The arterial thrombosis in this case may have resulted from the extension of the inflammatory process through contiguous parts from the right pleura to the walls of the innominate and right subclavian arteries. Thus they would have become the seat of a secondary arteritis, which in turn might cause the blood to coagulate by roughening the inner surface of the artery, and by discharging migratory leucocytes in great numbers into the blood itself.

9. We have already shown (see the comments on Case IV.) that in cases of arterial thrombosis the coagulum may, under favourable circumstances, by its presence and thus acting as a foreign body, cause the surrounding arterial tunics to become inflamed. Some of the possible consequences of such an arteritis are pretty well shown by the following observations:—

GOODFELLOW has recorded (*Med. Chirurg. Trans.*, vol. xlv.) two cases of extensive obstruction of the arteries of the lower extremities resulting from cardiac embolia and secondary thrombosis, followed by gangrene and death. There was also secondary arteritis that had gone so far as to develop puriform matter and a small abscess in the arterial tunics. Both were women, one rather robust, and aged 30; the other spare and feeble, and aged 17. In the *first case* the mitral valve was covered with very large vegetations, and the substance of the left heart was extensively infiltrated with a yellowish puriform matter. *The arteries and veins of the lower limbs were obstructed by firm coagula; the arteries as far down as the bifurcation of the popliteal.* At some parts the arteries were imbedded in dense fibrous tissue; at others *curdy puriform matter was deposited between the coats*, in one spot *forming a small abscess.* In the *second case* the anatomical lesions were very similar; but there was also extravasation of blood into the arachnoid cavity, and plugging of some branches of the middle cerebral artery. Goodfellow remarks that where the occlusion was partial or incomplete the arteritis was adhesive in character, and the exudation was susceptible of becoming organized; but where the occlusion was complete the arteritis was more intense, and the exudation was purulent from the outset or soon became so. (*New Sydenham Soc. Year Book*, 1862, pp. 116, 117.)

Comments.—These cases related by Goodfellow support Niemeyer's statement that abscesses have actually been established in the walls of arteries in consequence of circumscribed inflammation. The number of such cases on record, however, is but small, and it is for this reason that the writer has presented the above instances to the reader in this place. The most noteworthy points in these cases are, that the main artery of the lower extremities was occluded with cardiac embolia and secondary thrombi, that the embolism and thrombosis caused purulent arteritis with abscess of the arterial walls, that carditis was also present, and that the immediate cause of death was gangrene of the lower extremities.

10. In all the cases wherein thrombosis primarily attacked the large arteries of the extremities, that have been related in the foregoing pages, the subjects have been either youngerly or middle-aged people. Only one was so far advanced as 52, and several of them were quite young. But the aged also are subject to this form of arterial thrombosis, as the following case will clearly show:—

Dr. SANDS presented a leg at a meeting of the New York Pathological Society, May 24th, 1867, on behalf of his colleague, Dr. Gouley. He gave the following description of the case:—

Yesterday afternoon a consultation was held at Bellevue Hospital, on the case of a woman, aged 71, who had been in the hospital about five weeks. A few points in her history were ascertained by the house-surgeon. It appears that about seven weeks ago, she, being then in what she considered good health, was seized with a violent pain in the calf of the left leg. This pain extended down the leg, and continued with considerable severity for several days. On the third day after this attack of pain began, a dark-coloured spot was noticed on the top of the foot, just below the instep. At that time, according to her statement, the toes were not discoloured; the discoloration, however, spread with some rapidity towards the toes, until all of them were implicated: it also extended very gradually over the ankle and up the leg; and it was only ten days ago that the mortification ceased to extend, and that a line of demarcation became apparent. This line of demarcation passed nearly circularly around the leg, and was situated about four inches below the knee-joint. It was suspected that this woman laboured under heart disease, and Dr. Gouley, the attending surgeon, had satisfied himself that there was some disease of the aortic valves. His observation was not verified, however, by any of the gentlemen who examined the patient in consultation.

The question arose as to the propriety of an operation. In regard to it the consultation was not entirely agreed, but the preponderating opinion being in favor of immediate amputation, it was accordingly performed by Dr. Gouley, through the knee-joint. A very curious phenomenon was noticed at the time of operating, namely, no vessel bled enough to require a ligature. The popliteal artery and vein both stood out prominently, and were seen to be filled with a recent dark-red coagulum (thrombus). Other vessels were seen to be plugged in the same way. The plugging occurred at the level of the section made by the amputation, the proof of which was seen in the presence of plugs in the distal extremities of these vessels in the amputated member. This coagulum, in the case of the popliteal artery, extended down it for about an inch and a half; and there, at just about the point where the artery should bifurcate, it was very much distended, apparently by the presence of a globular plug of fibrin having a yellowish-red colour, quite distinct from that belonging

to the dark-red coagulum which occupied the vessel above. The arterial coats were diseased. They contained patches of atheroma, and appeared to be somewhat calcified where the globular plug (embolus) was found. Above this spot the arteries were healthy, and for several inches below, they were pervious, and did not contain coagula. The embolus adhered pretty closely to the inner surface of the popliteal artery. (*Medical Record*, vol. ii. pp. 302, 303.)

Comments.—This woman was well advanced in years, her age being 71. The left popliteal artery was the seat of the obstruction. There was atheromatous and calcareous degeneration of the arterial walls, which was more strongly marked at the chief point of obstruction than elsewhere. It is, however, by no means certain that the thrombosis in this case was secondary, or that it had its commencement in the lodgment of an embolus. That which appeared to be a globular-shaped plug of fibrin that had migrated from some remote part of the arterial system may, in reality, have consisted of fibrin which had been deposited upon the roughened surface of the calcified part of the popliteal artery, for this is precisely what is known to have happened in analogous cases; and Billroth considers arterial obstruction occurring in this way, in the limbs of the aged, as a not infrequent cause of gangrene.

11. Thrombosis of the peripheral or systemic arteries is sometimes met with in young children. Klob and Rauchfuss both have recorded autopsies of infants in whom the ductus arteriosus was found occluded with fibrinous thrombi, and arteries, such as the mesenteric and renal, were also found to be the seat of thrombosis. (*Canst. Jahrb.*, vol. iii. pp. 236, 247; also *New Sydenham Soc. Year Book*, 1860, p. 202.) Thus we perceive that no period of life is exempt from the occurrence of thrombosis of the systemic arteries.

Although spontaneous gangrene of the extremities is not exactly the theme of this article, it may serve to prevent the occurrence of some misapprehension if we state that such gangrene may be produced by causes other than arterial thrombosis. These causes are: 1, excessive and long-continued anæmia, with great contraction of the arteries and debility of the heart, such as are sometimes met with in chlorotic females; and 2, permanent spasmodic contraction of the smaller arteries, such as may be produced by eating spurred-rye. Occlusion of the arteries with coagula, however, is by far the most frequent cause of the so-called spontaneous gangrene of the extremities.

Arterial thrombosis sometimes gives rise to *remarkable forms of ulceration*, instead of gangrene, as it did in the following case related by Mr. John Simon:—

CASE IX. *Thrombosis of the arteries arising from the aortic arch; extensive phagedenic ulceration of face; intracranial inflammation; death; autopsy.*—E. P., aged 36, was under observation twenty months in St. Thomas's Hospital, where he died February 9, 1859. During this time he had been sub-

ject to a peculiar phagedenic process, under which he had lost most of the left side of his face. The disease began in the lower eyelid, and soon involved the globe of the eye; it then extended downwards, destroying the soft parts, and exposing the malar, maxillary, and nasal bones, which crumbled away in successive small sequestra; eventually, having opened largely into the nasal and buccal cavities, it attacked the base of the skull, and thus (after many months of extreme suffering) produced death by intracranial inflammation. The destruction did not advance uniformly; it was effected by successive little acts of sloughing, which alternated with feeble efforts of repair, and at every access left the patient with a larger and deeper excavation. There was no infiltration of surrounding textures; nor did the granulations, when they formed, ever tend in the smallest degree to exuberance. The meaning of the disease was not arrived at during life. Before the case came under my care [says Simon] an opinion had been expressed that it was cancerous; but the character of the sore was, I thought, conclusive against this view. The man having undoubtedly suffered syphilis, suspicions were entertained that this taint might be the cause of his local suffering; and various anti-syphilitic drugs were unsuccessfully tried.

On post-mortem examination it appeared certain that the intractable local disease had been a starvation-phenomena resulting from obstruction of arteries. Of the three vessels arising from the arch of the aorta, the left subclavian was completely obliterated by an old firmly adherent plug, nearly an inch in length, the left carotid communicated with the aorta by an aperture only just capable of admitting an ordinary probe, and the origin of the innominata was reduced by encroaching deposit to one-third of its normal calibre. Beyond their points of origin these arteries were of normal size, and contained but little atheroma. The heart was healthy; but the coats of the thoracic aorta, along its whole length, were so loaded with earthy deposit as to crackle under pressure. The brain was everywhere, perhaps, somewhat softer than natural, but with no difference in this respect between its two hemispheres. The lateral ventricles were distended with a turbid purulent fluid; the lining membrane was opaque, and the septum softened almost to diffluence. The base of the brain was coated with a layer of soft yellowish lymph, especially abundant in the middle line and on the under surface of the middle lobe. The dura mater, corresponding to the latter portion of brain, was, for about two inches square, much discoloured, and had its arachnoid surface covered with lymph. The bone beneath it was necrosed to the extent of about a shilling. (*Holmes's System of Surgery*, vol. i. p. 43, 2d ed.)

On this peculiar form of ulceration Simon remarks:—

"It seems probable, too, that the ulceration which is so frequently attendant on varicose veins of the lower extremity, is of somewhat analogous origin; for, in these cases, the local circulation of blood is materially interfered with—not, indeed, as being stinted, but as being rendered stagnant; and tissues which cannot renew their supply of blood are physiologically circumstanced almost as if blood were withheld from them." (*Ibid.*, p. 42.)

It is not improbable that the thrombosis of the arteries given off from the aortic arch, which was attended with such destructive consequences in the above case, was induced by constitutional syphilis or a syphilitic dyscrasia.

Again, thrombosis of the arteries of the extremities sometimes occasions, not gangrene, nor ulceration, but *a low grade of inflammatory action* in the parts whose blood-supply has been diminished, as it did in the following case. On this point Mr. John Simon justly says: "Obliteration, or narrowing of certain arteries—not enough to cause gangrene in

mass, but enough almost entirely to exsanguinate the affected part—may cause chronic inflammatory phenomena." (*Holmes's System of Surgery*, vol. i. p. 42, 2d ed.)

Dr. J. FORSYTH MEIGS has related in the *American Journal of the Medical Sciences* for January, 1869, pp. 31–34, a very instructive case of embolism and secondary arterial thrombosis of this sort resulting from cardiac disease. The arteries involved were the right anterior tibial, the right brachial, and the aorta. The subject was a gentleman aged 52. When Dr. Meigs saw him, on *April* 20, 1867—

"His chief symptoms . . . were loss of strength and appetite, occasional slight febrile symptoms, and what he supposed to be a rheumatic inflammation of the right foot. On his exposing the foot," says Dr. Meigs, "I was surprised to see an erythematous blush, with a puffy condition of the integuments, and some soreness on pressure, curiously limited so as to form one oblong patch on the instep, just over the course of the anterior tibial artery, and another one, restricted in the same way, over the line of the posterior tibial. These patches might have been two inches long by an inch wide, with irregular edges fading gradually into the healthy skin around." Dr. M. found that no pulsation could be detected in the arteries under the patches, and that the patient also "had severe constrictive and regurgitant disease of the aortic orifice, and a very powerful left ventricle." On *May* 15, "he was suddenly attacked with tumultuous action of the heart, great dyspnœa, and in a short time thereafter with severe pain in the right arm, followed immediately by coldness and numbness, and total absence of pulsation in the brachial artery from the axilla downwards." In a few days, however, the pain and numbness disappeared with the establishment of a collateral circulation. On *May* 26 he died, with strongly-marked obstruction-symptoms of the heart.

Autopsy.—"A firm embolus was discerned in the right tibial under the annular ligament of his ankle. . . . The right brachial was completely obstructed at its upper part by a firm embolus of an inch in length, and a soft coagulum extended from the obstruction as high as the giving off of the circumflex arteries in the axilla. The left ventricle of the heart was hypertrophied and dilated; the aortic valves were thickened, irregular, and ossified at several points. One of the valves was perforated by a large irregular opening, to all appearance produced by recent ulceration. . . . The ascending aorta was greatly dilated, its coats thickened and degenerated, and it was almost filled up by a recent coagulum." The descending part of the arch was greatly constricted, but it was an old affair, and has not much to do with the subject we are now studying.

Comments.—The points of interest which this remarkable case presents to us are, 1. That ulcerative endocarditis supervened upon valvular disease of long standing, and produced extensive destruction with perforation of one of the aortic valves; "the edges of the opening were soft, evidently undergoing disintegration, and the membrane covering the valves, extending for some distance into the heart, as well as upwards into the aorta, was inflamed; a plug of colourless lymph occupied the perforation in the valve, and two or three similar masses were found entangled in the chordæ tendineæ." 2. The ulcerative endocarditis was attended with the following symptoms, viz., loss of strength and appetite, occasional slight febrile symptoms, palpitation, and dyspnœa. 3. The ulcerative endocarditis gave rise to the occlusion of arteries in remote parts of the body with emboli which had been washed out of the heart by the blood-stream. 4. The

embolism of the tibial arteries was followed, not by gangrene, but by a low grade of inflammatory action in the integuments, which was denoted by an erythematous blush, a puffy condition, and some soreness under pressure. 5. The lodgment of an embolus in the right brachial artery caused the blood to coagulate on the proximal side of the plug up to the origin of the circumflex arteries, that is, up to where the nearest branches of considerable size were given off, and thus occasioned secondary thrombosis of the right brachial and axillary arteries. 6. There was also thrombosis of the ascending aorta. The occlusion, however, was not complete, and the coagulum was quite recent. Its formation was obviously connected with the dilated state of the ascending arch, and the congenital narrowness of the descending arch. These conditions strongly favoured stagnation.

In the same article Dr. Meigs relates another very interesting case of peripheral embolism, which occurred in a boy of ten years, during convalescence from scarlet fever, and terminated in recovery; but, as we are not quite sure that secondary arterial thrombosis was also present, this case hardly comes within the scope of the present inquiry.

Etiology.—With regard to the agencies which are concerned in the production of thrombosis of the peripheral arteries we may briefly state that they are the following: 1. Increased coagulability on the part of the blood itself. This may be due to hyperinosis, on the one hand, as is seen in parturient females and rheumatic subjects, or to excessive development of the white corpuscular element, on the other, as occurs in the marasmus which is produced by advanced age and wasting disease. 2. Atheromatous and calcareous degeneration of the arterial walls. This lesion promotes the formation of thrombi by impairing the elasticity and contractility of the arterial coats, by narrowing the arterial channels, and by roughening of, or occasioning projections from, the inner surface of arteries. 3. Feeble heart-action. This being present, the blood may stagnate and coagulate in the minute arteries of remote parts of the body, especially when their walls are stiffened by atheromatous degeneration, because the heart is no longer able to drive the blood through them. 4. The lodgment of embolia in the arterial canals. These foreign bodies are apt to cause stasis and consequent coagulation of the blood round about them, whenever they happen to get caught in the peripheral arteries.

The formation of coagula in arteries is also a well-known physiological effect of the laceration by mechanical or other means of their lining membrane. (*Sieveking.*) Finally, contusion of arteries may induce thrombosis and occlusion at the place of injury. As a result of this vascular obliteration infarction, serious visceral degeneration, or gangrene may ensue, according to the size and situation of the occluded artery. Thus, in two cases of injury in the lumbar region, Dr. Moxon found complete thrombosis of the renal arteries, with corresponding degeneration of the kidneys. (*Ashhurst.*)

Inflammation of the coats of arteries, in the ordinary acceptation of the term, however, plays a very insignificant part, so far as we now know, in the production of thrombosis, as we have already intimated.

With regard to primary acute arteritis, I infer from my own experience, both clinical and pathologico-anatomical, that it is a very rare disease. Authors generally agree in stating it to be of very infrequent occurrence. Secondary arteritis, however, is not very uncommon. Still the fact remains conspicuous that the coats of arteries are but little disposed to take on inflammatory action of a high grade. But, rare as primary acute arteritis undoubtedly is, does it exert any influence in the production of thrombosis when it happens to be present? Dupuytren, Cruveilhier, and others have held that when the lining membrane of arteries is inflamed the blood coagulates immediately on coming into contact with it. This view, however, is purely hypothetical and not susceptible of proof. On the contrary, we know from the investigations as to the formation of thrombus after ligation of arteries, and as to the process of healing of injured veins, that there is immediate coagulation of blood in the injured vessel, before there can be any inflammation of the walls of the vessel. Formerly, it was also held that there was a fibrinous coagulation on the inner surface of the inflamed artery or vein, as on an inflamed pleura; it can scarcely be decided whether this really occurs; what was formerly considered as such has been found to be a discoloured peripheral layer of the blood-clot. (*Billroth.*) Arteritis, however, does undoubtedly assist in the production of thrombosis when it produces such a thickening of the arterial walls as leads them to encroach upon the arterial canal, or when it causes the internal surface of the inflamed vessel to become uneven or roughened.

Several instances of this sort, some of which occurred in syphilitic subjects where the arterial thickening was "gummy," and others in persons who were free from syphilitic taint, will be given when we come to speak on thrombosis of the arteries of the brain.

I also sometimes think that, when the coats of arteries are inflamed and wandering cells escape in great numbers into their calibre, these cells may cause the blood to coagulate with great rapidity, but as yet this is mere conjecture.

Concerning arteritis, Mr. C. H. Moore, of the Middlesex Hospital, has recently said: "This is a very rare disease. The most distinct instance of a limited arterial inflammation is that of the umbilical arteries, which after the ligature of the funis are sometimes filled with pus." (*Holmes's System of Surgery*, vol. iii. p. 392, 2d ed.) The same writer also says:—

"The cases formerly described by surgeons as primary inflammation of the arteries appear, by the light of later research, to have been due to the impaction of a plug. Inflammation of an artery, and even suppuration, may then take place, but it is a secondary disease. . . . Upon the cases in which bony portions of artery are found obliterated and converted into fibrous cords, it may suffice to say that no evidence of previous arteritis or of any cause what-

ever can be adduced, and that the same result without obvious inflammation attends the obliteration of the ductus arteriosus, and sometimes follows the application of a ligature." (*Ibid.*, p. 392.)

We admit, however, that *chronic* inflammation involving the middle and internal coats of arteries and constituting the incipient stage of atheroma and calcification is one of the *most frequent of diseases.*

In cases where the main artery of one of the extremities is occluded with thrombi, atheromatous or calcareous degeneration of the walls of the collateral channels may assist not a little in the production of gangrene by destroying the expansibility of those channels, and thus rendering them unable to take upon themselves the office of supplying the limb with blood.

Thrombosis occurs much more frequently in the arteries of the lower extremity than it does in the arteries of the upper extremity; 1, because the arteries of the lower extremity are much more liable to suffer from atheromatous and calcareous degeneration; and 2, the arteries of the lower extremity are much further off from the central organ of the circulation than those of the upper extremity.

Cowper and Naish both observed that when they amputated the leg for so-called senile gangrene the vessels of the stump were but little disposed to bleed, because they were, to a great extent, already obliterated.

On this topic also Hodgson has made some important remarks. He says:—

"Arteries, however, are frequently involved in the sloughing of surrounding parts, in which case the blood generally *coagulates* in the vessel to considerable extent above the line of sphacelation. This circumstance prevents the accession of hemorrhage upon the separation of the slough; and the coagula being subsequently absorbed, the vessel contracts, and is ultimately obliterated. The cause of the formation of this coagulum is by no means evident, although it is probable that the condition of the mortified vessel interrupts the passage of the blood through it, and a coagulum is consequently formed extending to the next important collateral branch. Amputation is sometimes performed a little above the line of separation in which it is unnecessary to tie the arteries [because they are occluded by this process]; and parts destroyed by sphacelation generally separate without the occurrence of hemorrhage, the cavities of the vessels being plugged with coagulum." (*Hodgson on the Diseases of Arteries*, etc., p. 13, London, 1815.)

Symptoms and Course.—The phenomena resulting from thrombosis of the arteries of the extremities vary according to the size of the obstructed vessel, and the extent of the coagulum itself. When the minute arteries of the feet are the primary seat of the coagulation, two distinct types are presented. In one of them a brown spot forms upon one toe; it soon becomes black, and gradually spreads until the whole toe becomes completely dry. In favorable cases a line of separation forms at the phalango-metatarsal articulation, the toe falls off, and the stump cicatrizes. But the mummification may go higher and limit itself in the middle of the foot, above the malleoli, in the middle of the leg, or just below the knee. In

another series of cases, however, the disease begins with symptoms of inflammation, œdematous swelling of the toes, very great pain, and dark bluish-red discoloration, which subsequently becomes black; there are stages of the disease wherein, by the bluish-red and mottled appearance of the skin, we may see that in one place the circulation is carried on with the greatest difficulty, while in another place it has already ceased. This struggle between life and death the French have not inaptly compared to death by asphyxia, and termed *asphyxia locale*. In this form of moist hot gangrene, the disease usually attacks several toes at once, and extends to the foot, till in the course of a few weeks the entire foot, perhaps the leg also, becomes gangrenous; at the same time decomposition soon begins in the œdematous subcutaneous connective tissue, and the danger of absorption of putrid matter through the lymphatic vessels (septicæmia) is much greater than in the above-mentioned process of mummification. (*Billroth.*)

The symptoms, however, are quite different when the main artery of the limb is the primary seat of the coagulation. Then the phenomena are much the same as those which are produced by applying a ligature to the same artery. The parts which derive their blood-supply from the obstructed vessel become cold, blanched, and exsanguine, their motility becomes greatly lessened, perhaps destroyed, and their sensibility likewise is much blunted or destroyed, although they may be the seat of intense pain. At the same time no pulsation can be detected in the artery beyond the seat of the thrombus. If the collateral vessels are free from disease and obstruction, a compensatory blood-supply may be drawn through them. If such proves to be the case, after some hours, the coldness, pallor, anæsthesia, paralysis, and other signs of intense local anæmia will begin to disappear, and afterwards gradually pass away. If, on the other hand, no collateral circulation is established, the affected parts will acquire a deadly coldness, an utter insensibility, and a complete paralysis, with a violet color or perhaps a mottled appearance of the skin. In other words, the parts which derive their blood-supply from the occluded arteries will be stricken at once with gangrene. Decomposition will soon set in, and, if no line of demarcation is formed, septicæmia will speedily occur and destroy the patient.

In relation to this variety of arterial thrombosis, Dupuytren says:—

"But the most interesting symptoms to watch are those which take place in the artery. The pulse is imperceptible to the finger, or even entirely ceases. In the course of the artery is felt a hard, round cord; and an accurate estimate may be made of the extent and progress of the disease by the limit of pulsation, and natural feel of the artery. This circumstance was noticed in the case above related [Case III.]; two days before the patient's death, I predicted that the internal iliac artery would be found plugged as high as the aorta. But it is right to bear in mind that the hard, round cord which is felt, in these cases, in the course of the femoral artery, may be the obstructed vein." (*Dupuytren on Lesions of the Vascular System*, etc., p. 23. Sydenham Soc. Translation.)

This variety of arterial thrombosis is also for the most part attended with great pain of a stinging and burning character and seated in the gangrenous part.

Treatment.—Dupuytren relied mainly upon bloodletting and the internal administration of opium. Narrating a case of gangrene of the foot that occurred in the person of an old woman and was attended with excruciating pain, he says:—

"For many months I had recourse to the usual forms of treatment, including bark and opium, administered internally and applied locally; but still the disease extended, involving soft and hard parts alike in its destruction. A careful examination proved the non-existence of any important organic lesion. Vexed and disappointed, I determined on trying a different plan of treatment, and in this I was guided by the pulse, which was full and hard, and the face florid. I bled her; the pain was mitigated; sleep returned; and the progress of the gangrene was suspended; in short, the patient had not felt so well since the commencement of her attack. At the expiration of a fortnight the symptoms returned, and she was bled again, with similar benefit as on the former occasion. This treatment was adopted at each recurrence of the symptoms; the mortified parts separated, and the stump healed. Ultimately the patient left the hospital quite well." He further remarks: "Since the occurrence of the above case, many patients affected with senile gangrene have been treated by bloodletting, and always with similar success. But is this treatment applicable to all forms of this disease? I think that it may be advantageously adopted whenever the disease is accompanied with acute pain and much swelling, the pulse is hard and full, and the face flushed." He continues: "In all the cases of symptomatic gangrene which have come under my care, I have employed repeated bleeding, and have thus succeeded in curing, or at least relieving, two-thirds or three-fourths of the patients." (*Dupuytren, on Lesions of the Vascular System*, etc., pp. 25, 26. Sydenham Soc. Translation.)

We have quoted Dupuytren's experience at length because we think that at the present day the value of bloodletting is under-estimated in the treatment of plethoric cases of senile gangrene—cases in which the pulse is hard and full, the face flushed, the pain great, the parts swelled and inflamed.

Dupuytren also says:—

"Opium is a valuable remedy, and, when combined with antiphlogistic measures employed according to the condition and power of the patient, I am acquainted with no better mode of arresting the progress of symptomatic gangrene at any period of its course. The surgeon will, of course, avail himself of other suitable means, both local and general, by which to second the influence of these important primary agents, opium and bloodletting." (*Ibid.* pp. 26, 27.)

The treatment of the variety of gangrene which was first of all described, namely, that which results from thrombosis beginning in the capillaries or minute arteries of the toes and feet, is quite simple when it is not accompanied by any local inflammation. We must wait for the process of mummification to limit itself, and for the mummified parts to separate and drop off. All we can do is to attend to the alimentation of the patient, and administer opium or morphia to alleviate pain, with laxatives to secure an open state of the bowels.

But, when this variety of gangrene is attended with the symptoms of local inflammatory action—when the mortifying part is swollen, hot, and moist—the treatment may prove to be very difficult. In the cases belonging to this category the pain is apt to be dreadful, the stench arising from the rotting tissues intolerable, and the risk of the occurrence of septicæmia considerable. In such cases if the patient has a full, hard pulse, a flushed face, and a strong constitution, it may be advisable to take blood from the arm, as recommended by Dupuytren. At all events, it will be necessary to administer opiates in such doses and at such intervals as shall secure freedom from the pain, and purgatives often enough to keep the bowels in a soluble condition. If the patient is feverish the liquor ammoniæ citratis or acetatis should also be administered for the purpose of allaying that condition. With regard to local applications we cannot do better than call to mind the words of Mr. Pott: "Whatever heats, irritates, or stimulates, or gives uneasiness, appears to me always to increase the disorder, and to add to the rapidity of its progress. And, on the contrary, I have always found that whatever tended merely to calm, to appease, and to relax, at least retarded the mischief, if it did no more." It is generally desirable to keep the living parts warm; consequently, the limb may be wrapped in cotton-wool, or flannel. If the mortified part is dry, no particular local application is needed; but, whenever it is moist or emits a stinking odour, it may be enveloped in a charcoal poultice, made by mixing powdered charcoal and linseed-meal; or be dressed with folded cloths soaked in the Girondin disinfectant liquor, or in a solution of carbolic acid one part and water two hundred parts; or be surrounded by muslin bags filled with finely-broken wood charcoal. Stimulating applications, such as brandy, balsams, or resins, are usually worse than useless. (*Simon.*)

"If we attempt to combat the disease," says Simon, "by throwing in bark, and overloading the system with all sorts of stimulants and excess of food, we shall produce an increase of the local vascular excitement, which will be immediately followed by spread of the gangrene. I have known patients over-persuaded to take nourishment against their appetite, but never has the transgression been done with impunity. In cases of humid gangrene, a light farinaceous diet is usually the most fit, and stimulants should be given with caution—port-wine mixed with water being that usually preferred. Opium must be given in doses sufficient to allay pain, and should be continued during the day as well as the night. The patient must be confined strictly to bed, the limb kept warm and slightly raised. Finally, let the surgeon beware of interfering with the separation of the slough; nature will accomplish the task best when unaided. Indeed, surgical interference of any kind is, as a rule, dangerous." (*Holmes's System of Surgery*, vol. i. pp. 172, 173, 2d. ed.)

But when the main artery of the limb becomes primarily obstructed with thrombi so that the flow of blood through it is arrested, the treatment must be conducted on different principles. In such cases the first object to be accomplished is to save the exsanguinated part of the limb from becoming gangrenous. This is to be done by preventing the extension of the thrombus, by favouring the establishment of a collateral circulation, and, more

than all, by protecting the weakened limb from irritation and injury, which might overtask the little vital power it still retains. The normal temperature of the limb should be maintained by enveloping it with flannel or cotton-wool, and surrounding it with bottles of hot water, for if it is allowed to grow cold the tendency on the part of the thrombus to extend itself will be correspondingly increased. If the heart's action is weak, alcoholic and other stimulants should be administered for the purpose of arousing it, and thus preventing such a stagnation of blood in the arterial channels of remote parts of the body as especially favours the occurrence of thrombosis. Opium or morphia should also be administered in sufficient quantity to keep the patient quiet and free from pain. At the same time, care should be taken that nothing is placed around the limb which shall compress it or interfere in any way with the establishment of a collateral circulation. If happily the life of the limb is preserved, the patient should be kept perfectly quiet for several days longer, lest secondary arteritis with disintegration of the clot may supervene. He should also remain quiet until the coagulum becomes organized; or until from shrinking and absorption it becomes canalized or withdraws itself to one side of the artery, and thus allows the circulation in some measure to be resumed. But if unfortunately mortification occurs, we must support the patient's powers by the administration of nourishing broths, stimulants, and opiates, with the hope that a line of separation may be formed, and that in this way the patient's life may ultimately be saved.

Should amputation be practised for this variety of gangrene? When it is present the risk is often very great that death from septicæmia will occur before a line of demarcation is established, and then the surgeon may be sorely tempted to cut off the mortified limb with a view to save the blood from becoming contaminated by the absorption of putrid matter. On this important topic Dupuytren remarks:—

"This operation has been performed by a well-informed surgeon frequently, and with success, during extension of gangrene; why not follow his example? This is the answer to the question. Where the gangrene is consequent on some cause acting from without, both cause and effect may at once be removed [by amputation]; but in cases like the above, where gangrene is but a symptom, it is clear that amputation can have no direct influence in arresting the disease. In short, it may be laid down as a rule, that amputation ought to be deferred until the line of demarcation is defined, and the exciting cause of the disease has been subdued." (*Dupuytren*, op. cit., Sydenham Soc. Translation, p. 27.)

There are, however, exceptions to this rule, and, therefore, each case should be carefully judged by itself.

When arterial thrombosis of the extremities induces secondary arteritis of a suppurative character and the formation of an abscess, as it sometimes does, this abscess should be opened at as early a period as practicable, by free incision, its contents evacuated, and its cavity cleansed with some

antiseptic wash, such as a weak solution of carbolic acid or liqueur de Labarraque, for softening or disintegrating blood-clots are very apt to lead to the occurrence of unhealthy suppuration.

62 EAST 12TH STREET, Oct. 7, 1872.

ART. IV.—*Account of the Epidemic Smallpox as it prevailed in Allegheny City, Pa., in* 1871, *and its Treatment.* By DANIEL LEASURE, M.D., of Allegheny City. (Read before the Bedford Club, Dec. 15th, 1871.)

IN the early part of the summer of 1871, there was an unusual prevalence of smallpox in the city of Pittsburg and the surrounding municipalities; and by midsummer the disease had assumed the characteristics of an epidemic.

Much discussion arose as to the best means for meeting the emergency, but it was ultimately decided, on the night of the 6th of November, by the citizens of Allegheny City, to erect a temporary hospital at the Poor farm at Claremont, nine miles from the city; and on the 15th of that month the first patient was received into it.

At the request of the Health Officer, J. B. Williams, I drew up a plan for an hospital, and superintended its construction and equipment. It consisted of a building 32 by 78 and 12 feet in height, constructed of rough plank, the seams being covered by strips; 50 feet of this comprised four wards, two for males and two for females and children. A hall 8 feet wide, open at both ends, interposed across the building, on the side of which, opposite the wards, were the steward's room, the kitchen, and two dormitories, one for male and the other for female attendants.

The building was heated by a Franklin stove in the end of each ward, and the ventilation was secured by the erection of a terra-cotta pipe twelve inches in diameter for each stove. These terra-cotta pipes were set on brick pillars eight inches in height, leaving spaces between them near the floor. The stovepipes entered these terra-cotta pipes about three feet above the floor, and forming an elbow in their centre were carried up through them and several feet beyond their termination, two feet above the roof. An Emmerson's ejector was placed over all. Their *modus operandi* is as follows: The air furnishing draught for the fire passed up the stovepipe proper and carried out much of the air of the ward. The radiated heat from the stovepipe rarefied the column of air between the stovepipe and its inclosing pipe of terra-cotta, thus creating a constant current of cold air at the floor, which passed through the spaces between the little brick pillars, and prevented the waste of heat radiated from the

stove. The plan worked so well that much less fuel was used to maintain a proper temperature than would otherwise have been required; and the sickening odours from the patients were not perceptible, even when but a very small quantity of disinfectant was used.

Besides this hospital building there was at the distance of sixty feet another building constructed in the same manner 32 feet square, one-half of which gave a wash and mangling room 32 by 16 feet, with dormitory for laundresses, and two wards, 16 feet square each, used as convalescent wards, where the patients were removed during the period intervening between convalescence and fitness to be discharged. While in these wards their persons and clothing were purified before permitting their return to the city. There was also a disinfecting house composed of rough plank, 8 by 15 feet, where the patients' clothing was suspended to the sides and ceiling, and submitted to very strong fumes of burning sulphur. The bedding consisted of white cotton sacks filled with oat-straw, and pillows of the same, which were frequently emptied, the straw being burned, and the sacks washed. These with muslin sheets, army blankets, and long soft muslin shirts, constituted the bed furniture proper, while the bedsteads were of iron of the army hospital pattern. A hospital steward, two male and one female nurse, with cook and laundress, constituted the service force of the hospital.

Thus prepared I assumed charge of the hospital on the 13th of November with one patient in the third day of eruption, with confluent smallpox; and at the end of ten days, ten cases of very severe confluent variola and twelve cases of discrete variola and varioloid of various degrees of severity, were admitted, and afterwards two cases of confluent variola and six of varioloid were received up to Dec. 12th, one month from the opening of the hospital.

Treatment.—For a long time I had noticed mention made of the uses of the sulphites of lime, soda, and potassa in the treatment of zymotic diseases, and of the claims set up in their behalf, founded upon the theory, with which the readers of this Journal must be familiar, that, as these substances arrested or prevented fermentation in amylaceous, glucose, and saccharine substances out of the living body, they would also arrest or prevent a similar zymosis in the fluids and tissues of the living body; assuming that the process of incubation and development of disease in the body was of the same zymotic character: in other words, that the poison or virus in certain forms of disease was a true leaven, which, like the yeast plant and certain other forms of the microscopic cryptogami, was capable of being introduced into the fluids of the body, where, finding a suitable soil or nidus, it reproduced itself *ad infinitum*, at the expense of the vital constituents, giving rise to various abnormal results, as smallpox, measles, scarlatina, cholera, etc. In addition to these notices of the application of the sulphites, several well-authenticated reports have been

made of their apparent efficacy in typhoid and typhus fever and in smallpox. Without any well-defined theory of my own, either for or against the zymotic theory of disease, or of the action of the sulphites in arresting zymosis, I felt favourably disposed to give them a trial, and was the more inclined to this from having seen several cases of smallpox prove fatal in private practice during our present epidemic, in spite of the best means tried. This led me to hope but little from the purely expectant plan or from an officiously active one. I had observed patients die in the onset of the disease, before the eruption was fully developed, and for similar cases I could conceive of no remedy.

Others died evidently from severe pustulation of the throat and nares, apparently in some instances destroying the larynx; while in others, again, death seemed to ensue from the putrid exhalations from those organs so poisoning the air as it passed over them to the lungs as to render it unfit to vitalize the blood, and perhaps giving off its poisonous gas to still farther vitiate the vital qualities of this fluid.

But by far the greater number of cases died during the progress of the secondary fever, which set in about the tenth or eleventh day of the eruption. This I conceived to be a true pyæmic septæmia (if I may be permitted to use the former word adjectively), for, while there was undoubted septæmia, the result of the inhalation of the poisoned gases passing through the putrid throat and nostrils, there was also in some cases true absorption of pus, as manifested by the deposits in various portions of the body.

If by any means the secondary fever could be prevented, I felt sanguine that some patients might be saved. The report of some cases of smallpox treated by a navy surgeon in which, after the free administration of the hyposulphite of soda, the patients escaped secondary fever, encouraged me to give it a trial. Accordingly, as soon as an unvaccinated patient was admitted to the malignant ward, I ordered from thirty to forty grains of the hyposulphite of soda to be administered every four hours, until the eruption passed into the true purulent stage, when I directed glycerin, four ounces; muriated tincture of iron, half an ounce; chlorate of potassa, two drachms; sulphate of quinia, one drachm. A tablespoonful to be given every four hours. I need hardly state my reasons for the latter prescription in the purulent stage, as they must be obvious, if I am correct in assuming the secondary fever to be the result of pus and poisonous gases absorbed into the blood.

At the same time, to meet the indications in severe pustulation of the throat and nares with putrid discharges, I directed at first a gargle, consisting of water, eight ounces, and chlorate of potassa, two drachms, to be kept in a wide-mouthed bottle at the patients' bedside, from which they were to gargle their throats every few minutes in grave cases, and to swallow a portion each time. Second, to wash out the nares with

a pump syringe; the patient holding his head over a basin, while the nurse inserted the pipe of the syringe into one nostril, and, directing the patient to open his mouth, to forcibly inject from a basin through the nostrils, after the manner of the ordinary nasal douche, a wash composed of water, eight ounces; chloride of sodium, two ounces; carbolic acid, two drachms. This to be repeated *pro re nata*, as those passages filled up with putrid matter. This afforded so much relief that the patients were in the habit of calling for it whenever they felt the least discomfort from plugging up of the nostrils. To those who may not have witnessed this operation in severe cases of nasal pustulation, the amount of putrid discharge driven out by the pump would seem simply incredible.

All of the grave cases had more or less delirium; in some of them it amounted almost to violent mania, with the action of the heart fearfully accelerated, rising as high as one hundred and sixty pulsations to the minute. In such cases, as well as in the milder ones, I ordered thirty to forty grains of the hydrate of chloral, to be repeated in one, two, or more hours, as might be required to control the delirium, and induce calm sleep. On waking up after a few hours, the delirium had ceased, the patient was calm and perfectly rational, with the heart's action reduced to eighty or ninety, and in no case was there a recurrence of any mental excitement, which did not readily yield to twenty grains of chloral. From my experience with hydrate of chloral in the delirium of smallpox it seemed to exert some other, in addition to its hypnotic, action. It appeared to exert a peculiar if not specific effect upon the nervous system in general, and upon the vaso-motor nerves in particular, apparently in no way connected with its sleep-producing power. So marked was this, that my hospital steward observed it, and remarked that a patient always improved after thorough chloralization.

Conjoined with the treatment by medication, strict cleansing was enjoined. The patients were sponged off with tepid water and juniper tar soap twice daily, and their body and bed linen changed every second day.

Not a single dose of a cathartic or laxative was given in the hospital during the entire course of the disease.

The diet consisted exclusively of fresh milk, beef-tea, and eggs. Of the former, from a half to two-thirds of a pint were taken every four hours, and of the beef-tea occasional draughts, as the patient could be induced to take it. Milk was what all wanted, and it was given *ad libitum*. When the disease had passed into the purulent stage, and all through the period of desquamation, a liberal supply of good pure rye whiskey was given, in the form of milk-punch, from two to four times daily.

Several of the patients became excessively debilitated, and to them more whiskey was given.

As a disinfectant, I first gave a thorough trial to Tilden's solution of bromo-chloralum, and came to the conclusion that if the specimen used

was pure, it is utterly worthless. I used afterwards chloride of lime, and a solution of chlorinated soda, both in moderate quantities, and with the system of ventilation in the wards, there was no offensive odour at any time, even when eight malignant cases were in one ward.

Some deviations were made from the general medication, which will be noted in summing up; and, in giving results, I shall confine myself, so far as treatment is concerned, entirely to the twelve cases of malignant or confluent variola, and, first of all, I shall notice those which proved fatal.

Of the twelve cases of unvaccinated confluent smallpox three died.

The first was a white man aged 27 years, admitted on the third day of the eruption. He was put upon thirty grains of the hyposulphite of soda, and up to the fifth day of the eruption seemed to be doing very well. On the evening of that day he expressed himself as feeling quite comfortable. On noticing that his breathing was rather hurried, I ordered the light to be admitted freely, and found the entire skin of the face of a bluish-lead colour, and the vesicles on the body purple and livid, with numerous purple petechiæ between the vesicles; pulse one hundred and forty; evidently a case of variola nigra. He died next morning, retaining his reason intact till the last moment.

The next death was a coloured man aged 29, admitted on the sixth day of the eruption with intense pustulation of the throat and nares, and no efforts of the nurses availed to keep the passages clear, and he died, on the eighth day of the eruption, from suffocation.

The last death was a child eleven months old. Its father died three weeks previously from smallpox, and its mother took the disease and still continued to nurse the infant at her breast. It was never vaccinated, and, taking the disease in the confluent form, was admitted to the hospital with its mother on the fifth day of eruption, still nursing from her breast. It died from exhaustion on the eighth day of the eruption.

Of the remaining nine cases, six admitted on the second day of the eruption took forty grains of hyposulphite of soda every four hours, with chloral to control delirium, and milk diet *ad libitum*. All had the disease in the confluent form, with profuse pustulation of throat and nostrils, requiring almost constant gargling, and very frequent applications of the nasal pump. *All escaped secondary fever*, and made good recoveries.

One white man, aged 22, admitted on the second day of the eruption, threatened to be an extremely bad case, and I decided to give the carbolic acid treatment a fair trial, *without* the hyposulphite. Five grains of carbolic acid in simple syrup were given every four hours. Otherwise the general treatment was the same as in the other cases. He had furious delirium, requiring large and frequently repeated doses of chloral to control it. The eruption was excessive, and the secondary fever frightful, leaving him seamed and pitted very badly, with abscesses on the sides of the nose and cheeks. He required immense amounts of whiskey, valerian, and carbonate of ammonia, to support him until, with the aid of his robust constitution, he passed into convalescence. I did not try the carbolic acid treatment on any more patients.

One patient, a white male, aged 29 years, came from some point on the Allegheny Valley Railroad, and, having been put off the cars, walked a

day and night without food, till, on reaching sight of the hospital, he sank down exhausted, and was carried in by the attendants and placed in bed. It was the fifth day of the eruption, which was confluent on face, hands, feet, legs, and back. The pulse was one hundred and forty, with much sore-throat and cough, and profuse pustulation of the nares, with fetid discharges. He was put upon the hyposulphite of soda, with as much milk as he would take, which was very little. Delirium of the low muttering form was constant, and on my visit next day I found him with profuse red watery diarrhœa, four or five discharges in an hour; abdomen greatly distended and very tympanitic, with much tenderness in right iliac fossa; tongue dry, with red edges, pale side stripes, and dark-brown stripe down its centre. It seemed to me probable that this man had been exposed to the poison of typhoid fever, as well as of smallpox, or that his fatigue, exposure, and fasting had superinduced it upon his variola.

He was ordered a grain of opium at every second discharge from the bowels, provided it did not occur within less than an hour from the previous discharge, and a tablespoonful every two hours of tincture of valerian and simple syrup, each, two ounces; carbonate of ammonia, two drachms. During four days he remained almost stationary under this treatment; with strong beef-tea and strong milk-punch every four hours. Finally, the typhoid condition passed away, leaving him greatly prostrated; and after the period of variolous desquamation, he had a large abscess over the sacrum, and another on the outer side of his right knee, and one in his neck, which on being opened discharged large quantities of pus, and large plugs of dead cellular tissue, such as we so frequently see as a sequela in low forms of typhoid fever. It is hardly necessary to say that we could scarcely tell, in this case, whether we had any secondary fever or not. He was greatly emaciated, but cheerful and hopeful, and on Aug. 1st he had fully recovered.

The last of the nine surviving cases of unvaccinated confluent smallpox was a coloured woman aged 26, admitted on the fifth day of the eruption, which was confluent on face, hands, arms, legs, feet, and back. On the eighth day of the eruption, typhoid symptoms appeared, very similar to those described in the last case, and the same treatment was adopted with the same results. In both these cases death seemed imminent, at one period of the disease, from suffocation, but the nasal pump dislodged the fetid accumulations, and they rallied.

To sum up: there were thirty cases of variola and varioloid, taken indiscriminately from the homeless population of Allegheny City just in the order in which they appealed to the Board of Health for help and shelter, including pure Celt, pure Saxon, pure African, and mixed American.

Of these thirty, three died, one pure Saxon infant, one African adult, and one native-born American. The first died of exhaustion, the second of suffocation resulting from pustulation of throat and nares, and the third from black smallpox; ten per cent. of deaths.

The practical points in the treatment consisted of good ventilation, personal cleanliness, attention to the condition of the upper air-passages, keeping them clear by frequent applications of the nasal pump, charged with a solution of chloride of sodium and carbolic acid; hyposulphite of soda liberally administered during the vesicular stage, with glycerine, iron,

chlorate of potassa, and quinia during the purulent stage, with valerian, carbonate of ammonia, and whiskey in prostration, hydrate of chloral in the delirium, and all through every stage of the disease, a liberal supply of fluid food, in the form of milk, beef-tea, and raw eggs, and an entire absence of all purgative medicines. I would call attention to the entire absence of secondary fever in the six uncomplicated cases treated by the hyposulphite of soda during the vesicular stage.

I am not prepared to claim that the escape from secondary fever was exclusively the result of the hyposulphite, but, if not a case of "*post hoc ergo propter hoc*," the coincidence is at least remarkable, and, following in the wake of numerous similar cases already reported, would indicate that the practice is worthy of further trial.

I must deprecate the idea that there is anything new or startling in these results, or that there is ever likely to be found any specific for pure unvaccinated smallpox; but hope that the general plan of treatment adopted in the hospital under my charge may meet the approbation of my professional brethren, to whom it is submitted, with many misgivings from a scientific point of view, but some confidence in its practical utility.

Note.—At the end of six weeks from the time I entered on duty at the hospital, owing to the stringent measures of the Board of Health of Allegheny City, the smallpox was stamped out, and in a short time the hospital was closed for want of *material*. "Revaccination" was *thoroughly* adopted in the city, and the disease was arrested for want of fit subjects. Revaccination was not made obligatory by ordinance, but the physicians by common consent, in a great common danger, vaccinated and revaccinated every one who applied, and the mayor of the city, Hon. A. P. Callow, lent his official aid and personal influence to second their efforts.

ART. V.—*Description of Febris Diphtheroides, a hitherto undescribed Disease; with Cases.* By G. HARRISON GRAY, Acting Assistant Surgeon U. S. Navy; attached to the U. S. Naval Hospital, Yokohama, Japan.

I PROPOSE the name of Febris Diphtheroides for a disease which has attracted my attention, and which differs sufficiently from any other to be entitled to separate mention. So far as I am aware it has never been described, and is, I think, peculiar to Chinese rivers.

I first observed it up the Yang-Tse-Kiang River, afterwards at Shanghai, still later at Ningpo, both these places being on fresh-water rivers, and finally the last traces of it disappeared when we again commenced cruising in salt water.

Though diphtheria is by no means an unknown or uncommon disease in

the northern part of China, especially about Pekin, and though intermittent fever abounds in all parts of the country, this disease which I have called diphtheroid fever, and which presents some of the features of both those mentioned, seems peculiar to fresh-water rivers, and was unknown to physicians who had resided for a long time where I saw it. From this I fancy some of the elements necessary to the production of the disease were carried there in the ship, for while in Corea many of the crew had suffered with a sort of subacute pharyngitis, and our trip up the Yang-Tse-Kiang followed immediately after our return from Corea.

In describing and differentiating the disease under consideration, I shall follow the general plan pursued by Dr. Flint in his description of diphtheria, as it most nearly resembles that.

Anatomical characters.—The principal feature of the disease is a fever of greater or less intensity, accompanied by an inflammation of the mucous membranes of the body, this inflammation being attended with an exudation which has a tendency to become organized.

The fauces are first affected, and in some cases the local manifestations are limited to this situation. The first appearance is redness of the fauces and soft palate, attended by more or less swelling of both tonsils. Sometimes one is affected more than the other, but in all cases both are involved to some extent.

The exudation is at first thin and transparent like the white of a raw egg, but soon becomes opaque and thick. The edges are well defined though not so abrupt as in diphtheria proper. The exudation begins in little vesicular points at the base of the uvula and becomes best developed upon the posterior wall of the pharynx. Exfoliation takes place within a few hours, and is generally followed by a second or third formation, each new formation in some cases being accompanied by another chill. The lymphatic glands of the neck are enlarged but do not suppurate, and the swelling is so slight as readily to escape detection. It is uniform, and does not seem to bear any relation to the severity of the throat trouble. The common follicular secretion over the tonsils is seen, but is easily recognized by its pultaceous character, and by its dipping into the follicles. In the cases studied the nares or Eustachian tubes were not affected. In one case the gums, and those parts of the cheeks in contact with the teeth, were the seat of exudation. The œsophagus and stomach may be affected, and the small intestine is in the majority of cases. Exudation in the larynx sufficient to retard respiration is rare though it may take place.

Clinical history.—The first thing complained of is general lassitude and disinclination to exertion, which becoms progressively more marked for two or three days. The appetite fails gradually until there is complete anorexia. In every case the bowels are closed, but relief is readily obtained by the administration of a simple laxative. There is generally a well-marked chill, followed by fever, though sometimes flushes of heat and cold

alternate. The patient says he feels as if he "had been pounded." The skin in all cases is of a higher temperature than normal at first, and sometimes presents peculiar appearances. In one case there was the first day a roseolar eruption over the abdomen, which quickly faded and did not return. In another, the whole body looked as if it had been rubbed with whale oil, and this appearance, like the eruption in the other case, disappeared within twenty-four hours. So far as my observation has gone, there is the same condition of the tongue in every case. The edges are red, looking like raw beef, and the rest of the organ resembles an unbaked brick. I have never seen the same shades of colour in any other disease, and as this condition is present in every case of the disease under consideration, I regard it as one of the best diagnostic features if it be not pathognomonic. The pulse is variable, in some cases full and bounding, and in others simply increased in rapidity, while in the worst it is at first rapid but soon becomes slow and feeble.

In nearly every case there is early pain and tenderness in the abdomen, and when this appears at all it is within forty-eight hours after the chill, most often within twenty-four. The tenderness is ascribed to the region of the colon, principally over the sigmoid flexure. There is also a good deal of tympanitic distension, accompanied with rumbling or grumbling sensations.

The countenance of the patient is in most cases anxious and haggard, expressive of pain or distress somewhere in the economy. The local trouble in the throat is rarely complained of, and for this reason there is danger of its escaping detection. The sensibility of the palate, and other parts which are the seat of the inflammation, is entirely wanting, and they can be pinched, pricked, or tickled without producing any discomfort. Indeed temporary paralysis exists, though there is but little difficulty in deglutition except in bad cases.

The exudation is found upon examination of the throat as early as the second day. I have never seen a piece of false membrane larger than a little finger, and as a rule it occurs in small narrow strips which are easily detached. The colour is an ashy white, though from its situation it is liable to become changed in colour by contact with articles of diet or medicine. But the gravity of the disease is by no means dependent upon anything local, and it is difficult to determine what it is that so rapidly prostrates and exhausts the sufferer.

The pulse rarely exceeds one hundred, and often is accelerated at first only, and becomes slower than normal later in the disease. It is sometimes irregular, though I have not noticed any unfavourable symptoms connected with this. Hemorrhages do not occur. The skin is increased in heat at the beginning, sometimes in a very marked degree, but this rarely continues longer than a day or two, and in some rare cases is succeeded by coldness. In the worst case I have seen, this coldness of the

surface came on the second day, and continued to increase up to the time of death which took place on the fourth day.

As in diphtheria, there are various accidental appearances of the skin in different stages of the disease, such as rose spots, papulæ, sudamina, etc.; but little importance is to be attached to them.

I have seen but one case where there was difficulty in breathing, and this was confined to the act of inspiration, and was accompanied by a sense of fulness and constriction in the larynx. This lasted but a few hours, and, so far as I could discover, no false membrane was expectorated.

Anorexia is from first to last a prominent symptom, and an apparent difficulty in deglutition will sometimes be found to be only a disinclination to take food. Vomiting occurs only after the exhibition of some disagreeable article of ingesta. Diarrhœa is never present, the bowels being confined at first, and requiring a laxative from time to time through the whole course of the disease.

Except in grave cases the mind remains unaffected. Delirium is a fatal omen, and is generally followed by collapse, coma, and speedy death.

In the majority of cases the urine contains albumen in greater or less quantity, and death occurring early and in connection with delirium and coma, is doubtless owing to uræmic poisoning. I have failed to note any relation between the amount of albumen in the urine and the extent of the exudation.

The duration of the disease is from one to two weeks, the results in five cases being as follows:—

1st	Recovery in	16	days.
2d	"	11	"
3d	"	12	"
4th	"	10	"
5th	Death in	4	"

Diphtheroid fever may be associated with other diseases, but such complications are, I think, accidental.

All the four cases of which I have full notes, and several others which terminated favourably, have been under my observation for nearly a year since, and in not a single one have I seen any of the characteristic sequelæ of diphtheria, they all having quickly recovered, and steadily maintained their usual robust health.

Paralysis of particular regions exists during the course of the disease, but so far as my observations have gone, it is limited to this time, and does not remain after other symptoms have ceased. The bladder may become affected, causing retention of urine, and I have no doubt the constipation is due in some measure to involvement of the rectum.

One trouble which I do not find recorded as present in diphtheria, is as a rule a part of this disease, and to it the patient ascribes most of his suf-

fering. This is distension and pain in the abdomen; the pain being most marked over the sigmoid flexure. There seems to be tenderness along the entire intestinal track, but in the large intestine it is most severe, the regions traversed by the transverse, descending, and sigmoid flexure of the colon being extremely sensitive to pressure, even the weight of the bed-clothes becoming at times insupportable.

Pathological characters.—Diphtheroid fever is evidently closely akin to diphtheria, and is a constitutional disease, with a local manifestation in mucous membranes. The primary lesion is probably an as yet undiscovered blood change, and the visible characteristics and legitimate effects of this. I have seen but one death from it, and in that case a post-mortem was impossible.

The paralysis I am inclined to think is an effect of the local inflammation, as the sensory filaments alone seem to be affected, and these only—at least in the parts that can be seen—where inflammation and exudation occur. The line seems to be quite sharply drawn, where in the same structure sensation ceases and begins. Perhaps the exudation, which must be infiltrated through the mucous membrane, contains some morbid product which has the power of benumbing or destroying the sensibility of the nerve filaments with which it comes in contact, for certainly it cannot be the nerve-centres that are first affected, else all branches would sympathize. I do not advance this as a theory, for I cannot prove it to be the case, but observation certainly shows that the paralysis exists where the peculiar exudation occurs, and does not exist in closely contiguous parts of the same structure which are free from outward signs of the disease.

Causation.—Diphtheroid fever is an endemic disease. It may have a special cause, or it may be produced by a cause which, in another condition of the system, would result in something else. It is undoubtedly of miasmatic origin, but we have yet to learn whether the form of disease caused by this miasm, is determined by properties peculiar to different emanations, or by the condition or idiosyncrasy of the person exposed to their influence. From my limited experience of the disease it would be impossible to determine whether it be communicable or not, for all who suffered from it were exposed to the same influences of climate, lived upon the same kind of food, and were in all respects situated alike. To be sure they were not all attacked at the same time; but that proves nothing, for the stage of incubation in most diseases, more especially those of miasmatic origin, differs widely in duration. All the cases of which I have records were males and between the ages of 20 and 40.

Diagnosis.—The only difficulty in diagnosis is the liability of failing to examine the throat, which from the very first presents signs of the disease. Aside from this there is nothing at first to indicate more serious trouble than a simple attack of intermittent fever. But the condition of the tongue of which I have already spoken, the uniform constipation, and the

abdominal symptoms will quickly attract attention, and then if the throat be examined there need remain no doubt of the character of the disease.

Prognosis.—The greater number of cases terminate favourably. When death takes place it will probably be from uræmic poisoning, starvation, or some intercurrent affection.

Treatment.—The indications in treatment are to keep the bowels and bladder clear, to support the system, to relieve pain, and to remove the cause of the disease. Very little result can be obtained by local treatment, and on account of the insensitive condition of the parts implicated, strong caustic applications will be apt to do more harm than good.

It should be borne in mind that the local trouble is not the disease itself, and it would be quite as reasonable to expect to cure a man shaking with ague by binding him down, as to remove the cause of the disease by treating a single symptom of it.

Attention is first to be paid to the bowels, as in the majority of cases the patient will confess to have had no passage for several days. Tonics will be required from the very first, and the best one is, I think, the citrate of iron and quinia in full doses. I use it in vinous solution, giving a half ounce of sherry with each dose of the iron. Frequently milk-punch, or some equivalent, will be required, and it may be given very often without bad effect. Symptoms are to be treated as they occur. If the skin becomes hot and dry, the neutral or some diaphoretic mixture is indicated. Pain is to be relieved at once, lest its exhausting effects prove fatal. On account of the disposition of the bowels to remain closed, it is well to use some preparation other than opium for the relief of pain. The hydrate of chloral I have found very seviceable here.

Abdominal pain and tympanites will command early and careful attention, and must be relieved as soon as possible. Warm fomentations over the seat of pain, or turpentine stupes, are often grateful, or turpentine taken internally, combined with stimulants, will, in some cases, produce comfort and refreshing sleep.

Local treatment to the throat is called for only when the patient complains of soreness or stiffness, and then a single application, or at most two, of a strong solution of hyposulphite of soda will afford relief almost at once.

The most careful and constant attention must be paid to alimentation, or the patient will die of innutrition. It is sometimes necessary to administer food by the rectum, there is so great an aversion on the part of the patient to take anything by the mouth. The sense of taste is blunted or altogether wanting, so the pleasure of eating does not compensate for the exertion, and, moreover, there is no desire for food. Rich concentrated broths and essences should be selected, which contain most nourishment in the least bulk, and then given regularly and freely without

regard to the desire of the patient. If he will not take them by the mouth, they must be given per rectum.

Early inquiries must be made as to the condition of the urinary organs, and, if necessary, the catheter passed at regular periods.

All the foregoing points of treatment refer simply to supporting the system, and maintaining the strength and comfort of the patient. It remains now to consider, whether there be any method or mode of treatment whereby we may shorten the disease or eradicate its cause. I believe that there is, and though not claiming for it specific qualities, I must say that its effects are most happy, and I strongly recommend its use in the treatment of pure diphtheria. This is the hyposulphite of soda. Being convinced that the disease is caused by the presence in the system of some vegetable or animal parasite, I administered the hyposulphite, with the hope of striking at the root of the trouble.

In every case but one recovery followed, and in this one collapse occurred so early, as to render useless any treatment, except of the most active nature.

Permanganate of potassa, recommended by Dr. Samuel Jackson, Dr. Mackall, and others, in the treatment of diphtheria, I tried without effect, but as soon as the hyposulphite was substituted, recovery began. I give it in twenty to thirty grain doses, every three or four hours, until the body of the patient is saturated, as is evinced by the peculiar smell, and his complaints of a bad taste in the mouth. This is generally the first evidence afforded of a return of the sense of taste, and at this point the treatment may be discontinued, only going on with the tonics and stimulants if necessary.

Convalescence is rapid, and in no case after the appetite has returned have I seen a relapse, though it is well to keep up the iron and quinia some time after all signs of the disease have disappeared.

The following are a few of the cases. I have seen altogether about a dozen, though I have notes only of five, and much that is embodied in the above account is taken from the appearances of the disease in general, rather than its exhibition in any particular case.

CASE I. Sept. 25, 1871. G. A., æt. 25. Native of Ireland. Sailor. Was taken sick three days since with stiffness in the joints and general lassitude. Yesterday had a chill, followed by high fever, some of the latter remaining this morning. Tongue heavily coated, except at edges, which are red; pulse full and bounding; skin warm, and looks as if it had been oiled. Is constipated.

Ordered ol. ricini, and after catharsis, diaphoretic mixture every half hour.

26*th*. Is quite sick to-day. Was very restless and a little delirious last night. At 4 o'clock A.M., he had a high fever, with great heat of skin, flushed face, and complained of pains in the abdomen on pressure. Gave him at that time gr. x. of chloral, with orders to repeat in two hours if

necessary. Soon after taking it he fell asleep, and has not waked until 9 A.M. Complains of exhaustion and great weakness. Has a thick papular rose-coloured eruption over the chest and abdomen. Pulse 90, and full; skin hot and dry. Has no pain anywhere now. Tongue still coated, though not so much as yesterday; pupils normal. Bowels were imperfectly opened last night. Abdomen tender on pressure. There is some retention of urine. Ordered chloral gr. v. every two hours, light diet, and a mixture containing ol. ricini, acid. carbolic, opii tr., and ol. menth. pip. to be taken until bowels are regulated.

27*th*. Very much better. Is weak, and slightly feverish, but all bad symptoms have gone. Took last night, at 9 P.M., chloral gr. xv., and after 12 o'clock slept well. Bowels were freely opened by the oleaginous mixture. Eruption has almost entirely disappeared. Pulse soft and steady; tongue still furred; skin a little hot, but moist and soft. Ordered hyposulphite of soda gr. xxx. every three hours, and stimulants according to taste; milk-punch if agreeable.

28*th*. Passed a comfortable day yesterday, until 7 P.M., when he had an exacerbation of fever, with pain in the abdomen and tympanites. Passed a poor night, but is feeling better this morning. Took last night chloral gr. xv., and tr. opii gtt. x., which failed to produce sleep. Bowels confined again. Ordered ol. ricini, and continue the hyposulphite.

29*th*. Better. Took potass. bromid. gr. xx., but did not sleep any. Is drowsy this morning, and says he feels "all right." Bowels open; skin moist and cool. Continue treatment, and ordered tr. ferri chl. t. d.

30*th*. No sleep at all last night, and about twelve o'clock had a chill. Is asleep now (9 A.M.). Has no increase of fever.

Oct. 1. Not so well. I find on examination that his throat is sore, and on being questioned, he says it has been so all along. Slept well last night. Continue treatment, and use chlorine water for a gargle.

2*d*. Complains of headache; bowels free; skin and pulse normal. Ordered quinia. From this time he recovered rapidly, and on Oct. 6th all treatment was stopped, except iron and quinia, and on Oct. 8th he was discharged well.

CASE II. Sept. 27, 1871. Geo. M., æt. 20. Native of Ireland. A soldier. Saw the patient last night about 6 o'clock, when he complained of feeling "hot." Had a fever, and was constipated. Ordered a full dose of ol. ricini, which operated freely. This morning he is quite sick. Pulse 90, full and quick; skin hot and dry; abdomen tender and tympanitic; tongue like an unbaked brick in centre, with very red edges; eyes normal; has a distressed expression of countenance. Ordered chloral gr. v. every hour.

28*th*. Better. Examination last night disclosed a false membrane in the fauces and pharynx, swollen tonsils, and deeply congested state of neighbouring parts. Was ordered a chlorine gargle, which seems to have detached the exudation. He has still some fever, and complains of feeling "sick all over." Ordered potass. permanganat., as recommended in diphtheria, also chloral at night.

29*th*. Skin moist this morning, and quite cool, pulse normal, bowels free, and no pain except in small of the back. Throat very much better. Continue treatment, and ordered tr. ferri chl. gtt x every two hours.

30*th*. Still the same. Complains of pain in left chest, and weakness. No fever. Bowels free. No change in treatment.

Oct. 1. No better. Suffered last night with pains in the back. Stopped the permanganate of potassa, and substituted hyposulphite of soda gr. xxx. every three hours. Continue iron.

3*d.* Had a severe paroxysm of chill and fever yesterday afternoon. This morning feels exhausted, has pains in left breast, and throat is worse again. Continue treatment, adding quinia gr. v. t. d. Improvement steady from this time.

6*th.* Omitted all treatment except iron and quinia.

9*th.* Discharged well.

CASE III. Sept. 27, 1871. H. W., æt. 29; native of United States; sailor. Had a chill yesterday, followed by fever, in which latter stage I saw him and ordered diaphoretic mixture. This morning is feeling better, but weak. Complains only of constipation and anorexia. Skin a little warm; pulse normal; tongue slightly coated. Ordered ol. ricini, and after catharsis, quinia sulph. gr. j. every hour.

28*th.* Worse. Suffers this morning from distension of the abdomen, with great pain, headache, and giddiness, with want of appetite. Throat is congested, but not greatly. Uvula elongated. Tongue covered in patches, and looks like an unbaked brick. Skin hot and dry, and pulse 100. Ordered to stop quinia and begin hyposulphite in xxx. gr. doses.

29*th.* Better. Throat quite clean, and all pain gone, except in small of the back. Yesterday afternoon the throat was covered in patches with a false membrane, and was brushed over with a strong solution of hyposulphite of soda. Now scarcely any of the membrane is left. Continue treatment; ordered, R. tr. ferri chl. t. d.

30*th.* Same. Did not rest well last night; was nervous and excitable, and is so still. Has severe pain in the back, with a heavy feeling of the head. Complains of difficulty in inspiration, and a feeling of constriction and fulness within the larynx. Has quite a high fever, with a hot skin and rapid pulse. Continue treatment. R. Diaphoretic mixture p. r. n.

Oct. 1. Better. Has no pain this morning. Has a peculiar sour smell about the body. Bathe the skin with acidulated water. Continue everything.

2*d.* Complains of nothing but slight pain, and distension of abdomen. Took potass. bromid. gr. xx. last night, and slept well. Continue treatment. Resume the quinia ter die.

5*th.* Some tympanites to-day. Bowels have not been moved for two days. Ordered ol. ricini, and continue the rest.

6*th.* Omit all but iron and quinia.

8*th.* Discharged well.

CASE IV. Oct. 1, 1871. J. G., æt. 40. Native of the United States. Sailor. Had been complaining for several days of flushes of heat, alternating with slight chills, and yesterday presented himself with high fever. Did not complain at all of his throat, but examination showed it to be congested with little narrow strips of false membrane over portion of wall of pharynx, and greatly enlarged tonsils. Has severe pains along the spine from occiput to sacrum. Is easier this morning. Took bromide of potassium last night, and slept very well. Ordered hyposulphite of soda gr. xxx. every three hours. Also, tr. ferri chl. t. d.

2*d.* Better. Throat still swollen, but very much better. Has no pains at all to-day, but feels weak and "used up." Ordered continue, and chlorine gargle.

3*d*. Has some fever to-day, and feels very weak. Pain in left chest.
6*th*. Omit all treatment but iron and quinia.
7*th*. Discharged well.

CASE V. Nov. 8, 1871. H. L. P., æt. 30. Native of the United States. A stoker. Presents himself apparently with intermittent fever. Has had a chill this morning, and now has a fever. Complains of nothing else. Ordered diaphoretic during fever, and then quinia gr. j. every hour.

9*th*. No better. Skin is cool to-day, though the pulse is quick and feeble. His stomach rejects the frequently repeated doses of quinia. Give it in gr. v. doses three times to-day, combined with the carbolic acid mixture.

10*th*. Same. Continue, giving brandy f℥ss. t. d.

11*th*. Worse. Has now (9 A.M.) a cold clammy skin, feeble thready pulse, and "fishy" eyes, with contracted pupils. Is nervous, sometimes delirious, getting up frequently to go on imaginary business of importance. Has been unable to retain anything upon his stomach for over three days. Bowels moved yesterday. Tongue like clay in centre, and red at the edges. Throat and fauces congested and purple. Tonsils swollen. Has had no sleep for forty-eight hours, and is completely exhausted. Says he is "too tired to keep still." I have tried in vain to quiet his irritable stomach, but he cannot retain anything long enough to be benefited. Last night I administered by the hypodermic method, ♏ x. of Magendie's solution of morphia over the stomach, but without benefit. Was delirious, and did not sleep all night. This morning has taken one dose of ammoniæ carb. turpentine, tr. opii. and brandy, combined in emulsion, and has retained it. Continue it every two hours.

2 o'clock P.M. Patient has been sinking ever since morning, and is now in a state of collapse akin to that seen in epidemic cholera. Heat has been applied to his body by means of hot bottles, blankets, etc., but he remains cold from head to foot; even the breath feels cold like the air from a damp cellar. Has not passed his urine since yesterday evening. About an hour ago gave him per rectum some brandy, quinia, and a raw egg, after receiving which he went to sleep, and seems to be so now. He cannot swallow, apparently rather from disinclination than inability. Pulse is coming up a little, but there is no perceptible change in the temperature of the body.

8.30 P.M. The same dose was repeated with the same effect at three o'clock, but he has gradually failed. At 6 o'clock P.M., the catheter was passed, and about a half-pint of urine came away. It was found loaded with albumen. Has suffered this afternoon with hypostatic congestion of the lungs. Has grown gradually weaker, breathing with difficulty, the mucous râles growing all the time louder, and arterial pulsations ceasing from the extremities toward the centre, until at 8.02 P.M., he died. A post-mortem was impracticable.

YOKOHAMA, JAPAN, June, 1872.

ART. VI.—*Cases of Injury to the Nervous System by the Explosion of Shell.* By BENJAMIN RHETT, M.D., of Abbeville, South Carolina.

THE huge artillery employed in the recent war between the States in attack and defence of the coast fortresses and batteries of the Confederate States, presented somewhat new features, not only in their effects upon masonry of forts and the iron armour of vessels, but in the injuries inflicted upon the frail tenements of human clay exposed to the blast of their baleful breath. Fragments of the shell fired from the twelve and fifteen inch guns tore through walls at Sumpter, seven and nine feet thick. Solid shot passed through several walls and exploded beyond the fort. A huge basement pillar of Fort Sumpter was sheared like a twig, the base being entirely carried away.

It is not my purpose here to treat of injuries inflicted by direct contact of shot and shell; they snuffed out life as a feeble taper is extinguished by the blast of a hurricane; but rather to invite attention to certain injuries of a nervous character, arising from explosions of shell near the parties injured, which greatly interested me at the time, and which struck me as novel; also to introduce a case that has a bearing upon the capability of air, compressed by the rapid passage of a large body, to inflict injury, visible to observation, upon man's body; and, lastly, to mention a case of great disorganization of the head and upper parts of the body without external marks of injury.

CASE I. During the siege of Battery Wagner, Morris Island, South Carolina, in 1863, on the 16th of July, some eight men of the 1st South Carolina Regiment of Infantry, were serving a gun in the gun-chamber of one of the angles of the fort. Into this chamber rolled a fifteen inch shell, and exploded. Two men out of the eight escaped unhurt; one had his leg so badly mangled as to require amputation below the knee; three were killed outright; the remaining two, Lieut. Poor and a private, were affected in a way which will bear detail.

Lieut. Poor was brought to the hospital in the following condition. His head was drawn back by rigid contraction of the muscles; the flexors of the hands also were so contracted that his fingers' ends almost came in contact with his wrists. His inspiration was difficult, prolonged, and whooping; his countenance wore an anxious, distressed expression; his mental faculties were apparently undisturbed. He seemingly understood all that was said to him. *There was no wound, bruise, or mark of external violence upon his person.*

I would here ask what force impinged upon the nervous organization, and what part of this organization was injured. It is easy to say the shock of the explosion caused an aberration of nervous action. This is merely a loose use of words to describe the thing witnessed. Is the force compressed air shocking or striking the nerves of the cutaneous surface, and causing these phenomena by reflex action; or does the jar or jolt affect the nervous centres, brain, and spinal cord, directly; or are those great gal-

vanic nervous batteries thrown out of gear by an overwhelming, if but momentary, electrical force? I am unable to reply, but to my observation the phenomena as closely resemble the effects produced by injuries to peripheral nerves as to the nervous centres directly.

CASE II. During the same siege Capt. Twiggs of General Talliaferro's staff, was ordered up on the parapet of Battery Wagner to report the position and doings of the fleet then firing upon the fort. As he stepped upon the parapet, a shell from the steamer Ironsides rolled up the opposite slope and exploded some yards in front of him. He fell, as witnesses expressed it, "all of a heap," his limbs giving way under him. When lifted, he walked into the hospital, trembling and shaking as in an ague fit; his head drooping forward, with his chin on his breast, being supported under each arm by a soldier. He fell into violent convulsions, of which he had in succession four or five. *There was no mark of external injury upon him.*

The same treatment was employed in both cases; active friction to the surface and gentle stimulation, with relief to the most urgent symptoms in both.

Both were furloughed for sixty days.

Lieut. Poor never returned to service, becoming paralyzed upon one side.

Capt. Twiggs recovered, but was killed before his return to service in an altercation near Hamburg, South Carolina.

CASE III. A private of the 7th Regiment South Carolina Volunteers, acting as sentinel upon the walls of Sumpter, was heard to utter a wail immediately succeeding the explosion of a shell. He was brought into the hospital in a state of collapse. Pulse and voice feeble; surface cool; pupil sluggish; muscles relaxed; and mind torpid. The shell exploded so near his person as to bespatter him from the abdomen to the feet with small scales that merely scratched the surface. One fragment, a little larger than the others, had, on the outer surface of the leg, tunnelled a passage beneath the skin about an inch long and escaped through a small ragged wound. He was retained in the fort some twenty-eight to thirty hours, and kept alive only by the most indefatigable care and attention, but died of the shock on his passage to the city hospital, not receiving on his passage the necessary care and attention. Died of asthenia, he never having regained sufficient nervous force to sustain the heart's action without the aid of stimulants.

Here we have one case of rigid muscular contraction spasm. The next, irregular muscular contractions; convulsions. The third, that of utter prostration, and muscular relaxation, all resulting from the shock of explosions. The nearer the explosion the more serious the injury. One recovers; one is hemiplegic; one dies.

I will report a fourth case presenting hysterical symptoms, but it differs from the others in being complicated by a wound that will partially account for the phenomena of the shock.

CASE IV. A shell exploded above and behind the head of Lieut. Brown, of the Charleston Battalion of South Carolina Volunteers. A fragment of the shell tore up a flap of scalp of a semicircular form, extending from back of the vertex behind, and about one and a half inch

above each ear as far as the frontal bone, and turned it completely over his face, causing him literally to present a "raw head and bloody bones." The cranium itself was uninjured. He was brought into the hospital chattering and crying out, and, although a brave man, suffered tortures, for fear the bomb-proof would fall in upon him. Some of this nervous disturbance was no doubt due to the wound; but I have often seen much severer injuries unattended by hysteria, and I concluded that his nervous condition was partly due to the shock of the explosion occurring near him.

CASE V. The private injured in the gun-chamber with Lieut. Poor was brought into the hospital a frightful object, bleeding at mouth, nose, and ears, his eyes protruding from their sockets. The sutures of the cranium parted, one parietal bone overlapping the other, and the sutures with the occipital and frontal bones loosened. The head dislocated from the neck, the latitude of motion showing either a parting of the ligaments, or that the base of the occiput was broken up. The thoracic and cervical regions were bloated, blown up with an escape of air into the cellular tissue; emphysema. Yet there was no external wound or injury. The place and time did not admit of a post-mortem examination.

Now the question arises whence this extensive disorganization? I offer the following suggestion, not professing to affirm its correctness. I think the man was driven by the force of the explosion head foremost into the earth wall of the gun-chamber; that the cervical vertebræ were driven through the fractured occiput, and the sutures were forced asunder from within by pressure upon the cranial contents.

CASE VI. This case involves the mooted point of the capability of compressed air or wind from a missile to bruise or inflict visible injury.

After a skirmish upon John's Island, in which the besieging gunboats took part, a private entered the Marine Hospital of Charleston, of which I was then surgeon, to be treated for discoloration of the skin, a purple, yellow, and green bruise extending from the mamma to ilium of right side, and from the umbilicus to the dorsum. The discoloration precisely resembled such as I have seen in scorbutic patients among the Andersonville prisoners, an ecchymosis. But the man was in perfect health, no signs of scurvy. I give his account of the cause of the injury. He was standing with his rifle held by the barrel at arm's length and the butt resting on the ground, when a large shot or shell passed between himself and his rifle without touching either or moving him from his position. Immediately after he observed the discoloration, and was sent to the hospital for fear of internal injury. The case rests upon my evidence of the injury and upon the soldier's account of the cause.

ART. VII.—*Amputation at the Hip-joint.* By A. E. CAROTHERS, M.D., of Saltillo, Mexico, late Assistant-Surgeon U.S. Volunteers. (With two wood-cuts.)

To determine the conditions which render amputation at the hip-joint necessary, and the propriety of its performance under any circumstances, are

among the most difficult problems in military surgery. The proper treatment to be adopted in a case of gunshot fracture of the trochanters and neck of the femur is a grave question, especially if there be serious secondary lesions of the great vessels complicating it. The difficulty of its solution is little lessened by a consultation of authorities; some whose opinions are of the greatest weight standing arrayed on each side of the question; some regarding it only justifiable as a secondary operation, after a tolerance of suffering and suppuration has been established; others advocating recourse to it after reaction from the original injury has been established and before the vital forces have been exhausted by a uselessly prolonged period of pain, confinement, and suppuration; others again proposing to operate primarily, believing that the use of chloroform obviates the shock to such a degree as to render it safe, and not subjecting the patient twice to the shock of a grave injury; while many condemn it under all circumstances, trusting, in cases not suitable for resection, to the judiciously aided efforts of nature for a more favourable result than is predicted by the published statistics of the operation with their appalling list of deaths.

The wonderful results obtained from carbolic acid and other antiseptics in the conservative field of surgery of late years will do much to strengthen this latter opinion, or at least to circumscribe the list of cases demanding this terrible mutilation of the human body.

I was most forcibly impressed with these reflections after reading the two admirable papers on this and its associate operation, issued from the Surgeon-General's Office U. S. Army; viz., Circular, No. 7, of July 1st, 1867, on Amputation at the Hip-joint, and Circular, No. 2, of January 2d, 1869, on Excision of the Head of the Femur, which are among the most valuable contributions on this subject to surgical science that have ever been presented to the profession.

The opinions expressed in these reports are those of the leading surgeons of the U. S. Army in the late war, by whom the operation and the various substitutes for it were put into practice as extensively and under as fair conditions for determining their relative value, as by any other body of men in the history of surgery. As such, their opinions are entitled to the highest consideration; but to what widely different conclusions these distinguished gentlemen have arrived, and how little they have settled these questions, can only be appreciated by a perusal of their letters as published in the works referred to.

We are all aware of the fallacy of surgical statistics; but such is the practical spirit of the age that the world and the profession demand facts, not theories, and none will deny that by an intelligent analysis of a large number of cases practical deductions of great value may be arrived at. It is with the view of adding to the reliable statistics of this debatable operation that I present the following account of a case which has recently occurred in my military practice in the late revolution in this country,

leaving theoretical discussions of it to men of abler minds and greater leisure than I possess:—

Juan Blanco, æt. 14 years, a native of Guadalajara, Mexico, serving as orderly to Lieut. Ribera of the 21st Infantry of the Line, Mexican Army, was wounded by a conical musket-ball at the storming of the city of Saltillo, Mexico, on the morning of the 5th of December, 1871. He was carried the same day to the field hospital of the insurgent army, where he lay upon the ground with little or no attendance for several days. He was then removed to the military hospital of this city, where I first saw him on December 13th, he being pointed out to me by the surgeon in attendance as a hopeless case. On the night previous he had suffered a severe secondary hemorrhage, in which the blood ran off the bed and along the floor a distance of several yards, in consequence of which he was greatly debilitated and had fainted several times.

Determined to make an attempt to save his life, I asked and obtained permission to remove him to my house, which was done the same day. Upon inquiry I learned that he had had no evacuation from the bowels for eight days, or since the reception of the wound, during which time he had eaten very little food. An enema was given, which operated well, and he was allowed to rest the next day, being fed with nourishing broths, no attempt being made to change the dressing of the wound for fear of further hemorrhage.

On the morning of December 15th a consultation was held, at which Drs. Smith, Luckie, Barreda, and Fernandez were present. We found a gunshot wound in the upper portion of the left thigh, which was stuffed with lint, saturated with liquor ferri perchloridi, firmly bound down by a compress and roller. Upon removing the lint the wound was observed to be in a sloughy condition and quite offensive. From the account of the ward surgeon, and the appearance of the wound, it was thought that the hemorrhage had arisen from the profunda femoris artery, and this opinion was subseqnently verified.

A most extensive fracture of the trochanters and upper half of the left femur was discovered, the ball having entered the thigh at the middle of the inner margin of Scarpa's space behind the femoral artery, after having first nearly divided the penis; crushing the bone to fragments in its course, and making its exit just below the trochanter major. (See accompanying representation of the bone.)

In view of the great extent of the injury to the bone, and of the secondary hemorrhage from so important an artery as the profunda femoris with the almost certainty of its recurrence, and the difficulty of the deligation of the vessel, it was decided to amputate through the trochanter or neck of the femur as the only reasonable chance of saving life, and I performed the operation by inserting a long knife through the track of the wound, and cutting outward, making a short anterior, or rather antero-exterior flap; reinserting the knife, and making a long and thick postero-interior one, being guided in my selection of the incision and flaps by the peculiarities of the wound, making them from the tissue least injured by spicula of bone, and inflammatory and suppurative action.

Upon examining the remaining fragment of bone, I found that the capsular ligament was detached from its adhesions along the upper margin of the posterior inter-trochanteric ridge, which had been almost entirely carried away by the ball, along with the lesser trochanter; and that the neck of the bone was becoming carious, being involved in the same diseased action which had divided the artery, and was manifest at the wound of entrance.

Convinced now that the diseased action extended to within the joint, and of the worse than uselessness of leaving the head *in situ* to become a source of future irritation, I at once disarticulated and removed it, cutting away the capsular ligament close up to the acetabulum. Finding this latter in a healthy condition, I terminated the operation by slightly trimming the flaps to suit the altered operation, being careful to remove every fragment of tissue showing the least sign of disease. The wound was then carefully washed with a solution of chloralum, one ounce to four ounces of water, and, as soon as all bleeding had ceased, it was closed with silver-wire sutures, leaving drainage outlets at upper and lower angles, and dressed with lint wet in the same solution.

I was ably assisted in the operation by the gentlemen above named, and Messrs. Quintanilla, Elizondo, Cortesan, and Lozano, medical students from the school in Monterey. Chloroform was administered to complete anæsthesia by Dr. Smith, and was well borne.

Thanks to the efficient aid of my assistants, less blood was lost than in an ordinary thigh operation. No torniquet was used, nor was compression of the abdominal aorta attempted, Dr. Barreda compressing the femoral artery at the crural arch with the thumb of one hand, while with the fingers of the other he followed the knife as I made the anterior incision, grasping the artery as it was divided and retracting the flaps over the groin; another assistant standing ready to do the same with the branches of the ischiatic, circumflex and gluteal, which were ligated on the moment, the femoral being tied last.

When it is considered that the patient was a slim delicate boy, worn down by suffering, suppuration, and the neglect consequent upon the defeat of the troops to which he belonged, the occupation of the city by the hostile forces, and the lack of efficient hospital organization common to insurrectionary armies; it is not surprising that the shock of the operation was great. His pulse, which had been about 130 before the operation, disappeared entirely at the wrist for from twelve to sixteen hours; cold clammy sweat stood in bead-like drops on the skin, the breathing became sighing and hollow, and it was only by the use of the most vigorous measures that he was roused from this state of collapse. One ounce of brandy was ordered every two hours, or rather "ad libitum" with two grains of musk and eight grains of carbonate of ammonia every two hours, and artificial heat applied to the extremities, under which treatment a slow but steady reaction was established by the morning of Dec. 16. 6 A.M. Pulse feeble, 160; tongue dry; great thirst, anxiety, restlessness, but no delirium. Gave an eggnog and ordered Leibig's extract of beef ad libitum; continued brandy, one ounce every three hours. Nothing of note occurred during the day, the reaction steadily improving, the pulse gaining in volume and diminishing in frequency. 9 P. M. Pulse 140, much fuller; tongue more moist; less thirst; less pain; wound cool, and appears to be glued together by adhesive inflammation. Some sanguineous discharge from angles of wound; continue treatment.

17*th*, 9 A.M. Pulse varying from 135 to 145; temperature in axilla 100.5; appetite good; general condition improving. 9 P.M. Has eaten well and passed a very good day, but in the evening the young vagabond induced the servant to give him more than his allowance of brandy, and he is gloriously drunk.

18*th*, 9 A.M. Pulse 150; temperature 102; is clearly no better from last night's indiscretion; wound however cool; looks well and appears to be adherent; ordered boiled chicken, extract of beef, eggnog, and brandy in greater moderation than yesterday. 9 P.M. Has passed a very comfortable day; ate half a boiled chicken at dinner with appetite. General condition much the same, but pulse rather weaker than in the morning. Wound discharging well; pus at both outlets. Has had a natural action of bowels spontaneously. Smokes cigarettes with great satisfaction.

19*th*, A.M. Pulse 150; temperature 101.5; good appetite; condition improving. Removed all of the sutures, and found union by first intention complete throughout the wound except at the angles, where bits of lint had been inserted to maintain outlets for sanguineous exudations, and the synovia, which I anticipated would be secreted from the acetabulum upon its being opened, but of which no appearance has existed in the discharges which now consist of laudable pus. Supported the wound with strips of adhesive plaster. Injected orifices at angles of wound with the solution of chloralum twice a day; continue treatment. 9 P.M. Has eaten during the day a large piece of beef-steak, part of a chicken, bread, rice, extract of beef, etc. Pulse 138.

20*th*, 9 P.M. Has passed a good day, and is becoming very ill natured. Pulse 138.

21*st*, 9 A.M. Pulse 145; temperature 102.2; is slightly feverish, due to having no action of the bowels for several days. Ordered a simple anema, which did not act. Gave an ounce of castor oil, to be followed by another enema. 9 P.M. Has had a good action of purge, and is better. Pulse 140.

22*d*, 9 A.M. Pulse 132; temperature 101.2; condition decidedly improved. Stopped brandy, and ordered two pints of ale daily, instead.

23*d*, 9 A.M. Pulse 150; temperature 101.5. The wound does not look so well to-day, the granulations being somewhat pale and the pus scanty though well formed. The cicatrix opened for about an inch and a half at its outer end when I removed the adhesive strips. Upon investigation it was found that he has deceived me as to his food, taking much less than I supposed. Made no change except to personally superintend his meals.

24*th*, 9 A.M. Pulse 138; temperature 101.5; the granulations in the wound a little more florid. Changed the chloralum dressing for ℞ acid carbolic ℥j, Ol. olivæ ℥j. Commenced giving elixr Calisayæ, one ounce three times daily. The bowels act once in two days, the evacuations being consistent and show good digestion. The patient sat up in bed to-day, and amused himself by drawing pictures on a slate.

25*th*. Pulse 138; temperature 102. Removed all the ligatures but two. Wound rather pale, dressed with carbolic acid ℥j, resin cerate ℥j.

26*th*. No change. Pulse 136; temperature 101.8; continue treatment.

27*th*. Pulse and temperature same as yesterday. Had considerable griping in the bowels. Gave tr. zingiberis and tr. opii camph. Appetite not so good as heretofore, but appearance of wound improved. Another ligature came away.

28*th*. Pulse 134; temperature 101. The last ligature, that of the

femoral artery, came away to-day. General condition improving, and granulations in wound becoming again florid and firm; appetite better; no griping; bowels act once in twenty-four hours.

29*th*. Pulse 126; temperature 100.8; steadily improving; wound rapidly filling up. The patient sat up in a chair to-day for first time.

The boy continued improving, sitting up a few hours daily, and rapidly gaining strength until January 15th, one month from the date of operation, when he, for the first time, left his bed on crutches, with the aid of which he soon learned to walk.

The wound was firmly closed, except at the two angles, where a slight discharge was kept up for another month or so by a few small spicula of bone which had been buried among the tissues, escaping notice at the time of operating, and which made their way to the surface from time to time, and were extracted or discharged with the pus.

On February 3d he walked from my house to the hospital, a distance of four squares, all the way up hill, without assistance, where he remained until July 20, 1872, when a photograph (represented in the accompanying cut) was taken, and on the day following he left for the city of Mexico with the cavalry brigade of Gen. Ribera, in perfect health and with his stump entirely healed, seven months and six days after the operation.

During the time of his stay in the hospital nothing noteworthy occurred, except that in April he had an eruption of a herpetic character at the margin of the cicatrix, the outer end of which, in consequence, opened for about an inch and a half, rendering it necessary to support it with adhesive straps, under which treatment, combined with an improvement in diet and ventilation, and frequent baths in cold water, it soon firmly closed, and contracted to a surprisingly small line.

At the risk of wearying the patience of my readers I have reported this case in detail from the notes in my case book, and I only regret that I did not get the temperature of the first and second days, owing to not having my axillary thermometer at hand.

I wish to direct attention to several points of treatment, and certain surrounding circumstances, which seem to me to have contributed to the favorable result, and explain the remarkable rapidity of recovery, this boy being the first out of eight amputations of knee-joint and thigh, which I made at that time, who sat up on a chair or walked with crutches.

The operation in itself was that calculated to cause the least loss of

blood from the facility and rapidity of its performance, no attempt being made to control hemorrhage by mechanical appliances, always more or less imperfect, but dependence being placed upon the dexterity of the assistants in following the knife with their hands, grasping the flap as it was made, and stopping the orifices of the bleeding arteries with the tips of their fingers as soon as they were discovered.

The liberal use of stimulants and nutrients on a scale and in view of symptoms, that would scarcely meet the approval of those unaccustomed to hazardous operations upon soldiers worn down by physical and moral causes, needs only to be referred to to receive its just share of credit in the result.

The use of chloralum as a dressing, which in my hands has been of great service, and I think its use contributed largely to the success of this case, securing union by first intention, preventing diffuse suppuration, and destroying all septic influences. My experience has not yet been sufficiently great in its use to warrant my drawing a comparison between it and carbolic acid, but, so far as it goes, in hospital gangrene, erysipelas, and simple phagedena, it leans decidedly in favour of the chloralum.

The extraordinary rapidity of recovery and the absence of all untoward symptoms in the progress of the case are attributable to the causes referred to, combined with the youth of the patient, the climate of the place in which the operation was performed, and the race to which the patient belonged. The lower order of Mexicans, in whom the Indian blood predominates, or is almost pure, bear surgical operations better than any other people I have seen; due, perhaps, to their simple and temperate life, mainly in the open air; their stoicism and complete resignation to the "voluntad de Dios," securing a tranquil state of mind. This place being over 5000 feet above the sea level, situated in a mountainous district noted for its salubrity, the climate is singularly favourable to surgical operations.

As to the operation selected I desire to call attention to certain advantages derived from it, premising that I claim no credit for originality in it, as I was almost compelled by the peculiarities of the wound to adopt it as the best means of securing sound flaps. From the oblique character of the wound its outer angle is sufficiently low when the patient is on his back to admit of complete drainage of discharges from the deepest part of the wound, the acetabulum, while, at the same time, it is sufficiently in front to facilitate the dressing, leaving the cicatrix subsequently under the patient's own control for washing, dressing, etc.

The stump obtained by making the long flaps from the posterior and inner part of the thigh presents great advantages as affording a full round buttock to the patient, on which he can sit with ease and comfort undisturbed by the cicatrix, which is entirely out of the way; as will be seen by the photograph; and in the event of the adaptation of an artificial limb it is sufficiently high to be out of the line of pressure of the weight

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of the body, at the same time being in the softest part of the stump, and not exposed to pressure over any bone.

Although not prepared to go into a disquisition upon, or defence of, this operation, yet I will say that I can conceive of no other procedure which would offer a chance of life equal to it in a case like the one I have just reported; in which the bone was extensively fractured to within the capsular ligament; or at least to its very insertion, the neck of the bone carious to the epiphysis from an extension of the sloughing action in the soft parts, the joint unquestionably opened; *and where a secondary hemorrhage from so important a vessel as the profunda femoris had been caused by sloughing of the wound.*

The deligation of the profunda is in itself a serious and difficult operation, requiring a high order of operative skill, and in this case would have probably been useless, as will be admitted by all who have seen such cases die after repeated hemorrhages, from the diseased action involving the coats of the artery above the ligature.

The ligature of the femoral artery at the crural arch, the nearest point of safety to the slough, would, in all probability, condemn the limb to gangrene. The excision of the head and nearly half of the shaft of the femur, is almost as formidable an operation as the amputation even, under favourable circumstances, and would have been useless in this case, as offering no relief to the principal danger, that of a return of the hemorrhage.

To expectation the same argument applies, so what can the surgeon do but amputate? That by so doing he will offer the unfortunate patient a fair chance of life is shown by this case.

If any conclusions can be founded on the foregoing report and observations, they are, that where gunshot fracture of the trochanters, neck or head of the femur is complicated by wound of the great vessels of the thigh, or where they are included in a slough of the wound causing secondary hemorrhage; it is the duty of the surgeon to give the patient the chance for life that lies in *amputation at the hip-joint.*

SALTILLO, MEXICO, August 6, 1872.

ART. VIII.—*Report of Three Cases of Choroiditis following Cerebro-spinal Meningitis.* By CHARLES S. BULL, M.D., Assistant Surgeon to the Manhattan Eye and Ear Hospital, New York.

THE following three cases of choroiditis from cerebro-spinal meningitis differ so widely in the ophthalmoscopic appearances from each other, and in some of their subjective symptoms, that I deem them worthy of publication.

CASE I.—F. A., aged 12, a native of the United States, was brought to me July 18th, 1872, with the following history. The patient has always been a type of robust health, and was very tall and well developed for his age. On the 6th of February last he was attacked with violent headache and nausea, and soon the symptoms pointed to a well-marked attack of cerebro-spinal meningitis. He was confined to his bed for five weeks and was not able to leave the house for three weeks longer. Unconsciousness set in on the third day, but there were intervals of consciousness, and in them the patient always complained that his eyesight was very much affected. He never complained of any diminution of hearing, and it was only during his convalescence that he was found to be entirely deaf. When he presented himself to me the deafness was complete, but he intimated in writing that his vision was better than it had been. The eyeballs were freely movable in all directions, and the pupils of both eyes reacted promptly to the influence of light. In the right eye, vision was $\frac{20}{C}$; in the left $\frac{20}{LXX}$. In the right eye the field of vision was defective in the upper and outer quadrants; in the left it seemed to be concentrically limited pretty symmetrically. After atropia had been instilled, the following changes were noted: R. E. the optic disk was congested over the inner half of its surface, and somewhat œdematous; the outer half had a dirty gray colour and was surrounded by a border of pigment; arteries reduced in calibre but not markedly so; veins congested and tortuous. The retina was apparently normal with the exception of some œdema to the inside of the papilla. The choroid, in its inner and lower part, was strewn thickly with small yellowish spots of exudation, most of them very minute, but some quite large, and so irregular in shape that they had probably resulted from a coalescence of a number of smaller spots. The larger masses were almost all perceptibly elevated above the surrounding surface and pushed the retina before them, and two of them showed a refraction of +24, the rest of the fundus being emmetropic. The retinal vessels could be seen running over these spots of exudation, and in their neighbourhood the choroidal stroma was markedly atrophied. There was very little pigment to be seen anywhere and the masses of exudation were much smaller in size and fewer in number as the equator was approached. In the *left eye* there were no large masses of exudation, but the number of smaller ones, about the size of an ordinary pin-head, seemed to be countless, and were spread with great regularity all over the fundus. The optic disk was but little altered from the normal appearance, and the arteries were perhaps a trifle smaller in calibre. The retina was normal, there not being a trace of œdema. The refraction of this eye was also emmetropic. In this case the intracranial inflammation does not seem to have travelled down the optic nerve to the eye, and set up a neuritis descendens, but appears to have affected the stroma vessels primarily, and the optic nerve only became involved indirectly in one eye, and in the other eye it had apparently remained intact.

CASE II.—A. McD., aged 4, of healthy parents, was brought to the Manhattan Hospital in the latter part of May, with the following history. On the 23d of March, the child, having previously been perfectly well, was suddenly attacked with vomiting and high febrile action, which was quickly followed by numerous convulsions. On the fourth day after the disease

commenced, the mother noticed a yellow gleam from the left eye, which increased in brightness and distinctness for several days, since which time it has remained about the same. The right eye has never been involved. Two weeks after the commencement of the disease, the right mastoid process became swollen and painful, and the next day there was a purulent discharge from the right ear, which lasted about two weeks and then ceased, and has not since recurred. On examination the eyeball was found to be normal in size and position, and its excursive movements were perfectly free, but the tension was markedly diminished. The iris was normal in appearance, but the pupil was widely dilated and insensible to light. The cornea and aqueous humour were perfectly clear, and the yellow appearance of the fundus was very distinct. On ophthalmoscopic examination the lens and vitreous were found to be perfectly clear and normal. The retina was normal in appearance, but was elevated very irregularly above its ordinary plane by the subjacent mass. The latter was of a bright yellow, of the same hue throughout, and seemed to occupy the whole extent of the choroid, except at the extreme periphery, where portions of atrophied choroidal stroma could be seen. The retinal veins passed up and down over this irregular exudation and were very small in calibre, and their adventitia very much thickened. The optic nerve entrance seemed somewhat smaller in diameter than normal, as if the choroidal exudation had encroached upon it by pressure, and was of a brilliant white colour, as if the seat of advanced atrophy. The refraction of the fundus varied between +48 and +16; the refraction of the fellow eye was emmetropic. The amaurosis was complete. The case seems to me of unusual interest, as the retina was apparently but little involved. The atrophic appearance of the optic disk is evidently a secondary process, due to pressure, not only from the side of the infiltrated choroid, but from exudation into its sheath and probably between its fibrillæ.

CASE III.—Delia B., 2 years of age, was brought to the N. Y. Eye Infirmary on the 14th of May last with the following history. The child had been healthy up to about two months previous to her admission, at which time she was seized with a high fever, followed by a series of convulsions. The mother brought a note from the physician who had attended the child in her sickness, certifying that the patient had suffered from cerebro-spinal meningitis of an aggravated form, the convulsions having been particularly violent. The child had been unconscious at intervals, but nothing wrong had been noticed about the eyes until convalescence set in, when the mother discovered that the child did not take notice, and that the pupils of the eyes were widely dilated. The disease had lasted six weeks and left the patient very emaciated. On examination the pupils of both eyes were seen to be extremely dilated and completely insensible to light. There was no reflex from the fundus, and, with the exception of the pupils, there was nothing abnormal to be seen about the eyes. On ophthalmoscopic examination, the optic disks were seen to be of a bright, glistening white colour; the refraction of both eyes was emmetropic, and the atrophic excavation, which occupied nearly the whole of each papilla, had a refraction of —24. The lamina cribrosa was distinctly visible, and the arteries were of a thread-like tenuity, and could only be traced for a short distance beyond the periphery of the disks. The veins were also markedly diminished in calibre, though they could be followed as

far as the ora serrata. Both eyes presented the appearance of pronounced atrophy of the optic nerves, but whether this had resulted from a neuritis descendens following a basilar meningitis, or from intracranial pressure during the height of the meningitis, it was almost impossible to say. Still the process had lasted but two months, dating from the onset of the inflammation, and as there were absolutely no signs of any proliferation either in the papilla or retina, which would naturally result from an interstitial neuritis, and as such proliferation could hardly fail to leave behind it some traces of its presence; I am inclined to the belief that the nerve atrophy was the result of pressure. It would be interesting to know whether such pressure had occurred over the course of the optic tracts, or whether its situation was more posterior, and involved the optic thalami or crura cerebri. In this third case the hearing was apparently unaffected, and hence the intracranial pressure was probably limited in extent.

No. 7 WEST 46TH ST., NEW YORK.

ART. IX.—*Two Cases of Syphilis, in one of which the Primary Lesion was seated on the Internal Surface of the Eyelid, in the other on the Cheek.* By F. R. STURGIS, M.D., Assistant Surgeon Manhattan Eye and Ear Hospital, New York City.

H. B., 22 months old, was taken about the latter part of May, 1871, to my friend, Dr. E. G. Loring, for a curious affection of the inside of the right lower lid and at the outer angle. The following is Dr. Loring's description of the symptoms.

Lid swollen and inflamed; eye bloodshot at outer canthus. On everting the lower lid, a dusky-red papule was visible; this speedily changed into an ulcer with a clean granulating surface of a reddish colour. This ulcer was not indurated at first, and there being no reason to suspect syphilis, the glands were not examined. The mother says that the swelling of the lid began two weeks before the child was seen by Dr. L.

This ulcer was repeatedly touched with arg. nitr., but without benefit.

In the latter part of June, 1871, he had a febrile attack, during which an eruption appeared upon his stomach and chest.

I saw him for the first time in the middle of July, 1871. The lid was red, swollen, and indurated; this latter well marked.

On everting the lid a red granular ulcer was seen at the lower portion of the outer canthus, covered here and there with the opaline spots which mark the transition stage of the primary lesion into a mucous patch. On the body, arms, and legs, a roseola in the stage of decline. In the mouth and on the tongue, mucous patches in full blast.

Convinced what the trouble was, I sought the solution of it in the mother, but an examination made of her then and subsequently has shown no signs of disease. I then questioned her about the child's playmates and companions, and learning that one of her sisters, who was very fond of the child, was in the habit of kissing him, I asked the mother to bring

her to me, which was done, but with no better success than in the mother's case.

In despair, I then asked for the father. After I had seen him, I was no nearer the solution of the problem. He assured me he had had no venereal disease in his life, and certainly I had no reason to doubt his word. I have, therefore, never been able to find out how the boy's disease originated. I warned the mother about the danger of contracting the disease from kissing the boy herself, or allowing any one else to do so, until I was satisfied that he had no longer any patches in the mouth. This advice was disregarded, however, and on the 13th February, 1872, the mother came to me, stating that her little girl, six years old, had a sore upon her left cheek, which had begun a short time before as a red papule, "looking like a flea-bite," as she described it. I saw the child on the 16th day of the same month, and found a typical chancre.

The induration of its base was not well marked, but that of the submaxillary and post-auricular glands was characteristic. She subsequently had roseola, mucous patches, etc.

These cases are interesting from their seat and as occurring in patients so young. Although not unknown in these regions, primary lesions of the eyelids and of the cheeks are far from being common, as may readily be seen on glancing at the following tables:—

Table 1. In 472 cases of indurated chancres recorded at the *Hôpital du Midi*, the lesion was seated

On the penis and in the urethra in	434	cases.
" scrotum	7	"
" peno-scrotal angle	4	"
" anus	6	"
" lips	12	"
" tongue	3	"
" nose	1	"
" pituitary membrane	1	"
" eyelid	1	"
" fingers	1	"
" leg	1	"
" foot	1	"
	472	

(FOURNIER, *Leçons sur le Chancre*, p. 364.)

Table 2. In 10 cases, the chancres were seated

On the lower lip in	4	cases.
" upper lip	2	"
" cheek	1	"
" forearm	1	"
" fingers	1	"
" nipple	1	"
	10	

(BRYANT, *London Lancet*, 1868, vol. i. p. 525.)

Table 3. In 93 cases, the chancres were seated

On the genital organs in	4 cases.
" upper lip	27 "
" lower lip	29 "
" tongue	11 "
" naso-labial groove	1 "
" face { chin, forehead, and cheek. }	4 "
" finger	2 "
" upper eyelid	2 "
" gum	2 "
" labial commissure	7 "
In the nose	2 "
On the tonsil	1 "
" palate	1 "
	93

(PUCHE FOURNIER ET ALII, *quoted in Fournier, Etude sur le Chancre céphalique.*)

Table 4. In 31 cases, the chancres were seated

On the lips in	14 cases.
" perineum	2 "
" tongue	2 "
" anus	2 "
" pubes	2 "
" groins	1 "
" thigh	2 "
" uvula	1 "
" eyelid	1 "
" nose	1 "
" forehead	1 "
" internal angle of right eye	1 "
" pituitary membrane	1 "
	31

(AIMÉ MARTIN, *De l'Accident primitive de la Syphilis constitut.*)

Table 5. In 21 cases, the chancres were seated

On the lips in	17 cases.
" tongue	3 "
" labial commissure	1 "
	21

(BUZENET, *Le Chancre de la Bouche, etc. Thèse de Paris*, 1858.)

Table 6. Of 373 cases, the chancres were seated

On the penis and in the urethra in	342 cases.
" scrotum	6 "
" pubic and hypogastric regions	2 "
" lips	13 "
" tongue	4 "
In the anus	1 "
On the thigh	1 "
" fingers	1 "
" gum	1 "
" cheek	1 "
" groin	1 "
	373

(BASSEREAU, *Traité des Affec. de la Peau, Symptom. de la Syphilis.*)

Table 7. In 403 cases, the chancres were seated

On the penis in	390 cases.
" scrotum	3 "
" pubes	2 "
" lips	5 "
" tongue	1 "
" thigh	1 "
" eyelid	1 "
	403

(CLERC, *Traité pratique des Mal. veneriennes.*)

Table 8. Out of 113 cases, the chancres were seated

On and in the genitals in	75 cases.
On the perineum	4 "
In the anus	7 "
On the thighs	6 "
" groins	2 "
" lips	7 "
" tongue	1 "
" uvula	1 "
In the mouth (no other designation)	4 "
On the nose	3 "
" forehead	2 "
" neck	1 "
	113

(*Idem.*)

Table 9. In 130 cases, the chancres were seated

On the genitals in	89 cases.
In the anus	12 "
On the groins	1 "
" thighs	1 "
" lips	10 "
" labial commissures	1 "
" nostrils	2 "
" breasts	9 "
" undesignated	5 "
	130

(ROLLET, *Traité des Mal. veneriennes*, p. 705.)

Besides these tabulated cases, others are reported by various authors. Cullerier[1] gives the plates of two cases of chancres of the lids; Bumstead,[2] one on the internal surface of the upper lid; Desmarres[3] and Lawrence[4] on various parts of the lid, and the writer[5] one on the cheek.

From this it will be seen that out of 1646 tabulated cases of the seat of indurated chancres, it occurred only six times on the eyelids, and three times on the cheeks.

[1] Atlas of Venereal Diseases, translated by Bumstead, plate 14, figs. 2, 3,
[2] On Venereal Diseases, 3d ed. p. 415.
[3] Maladies de Yeux, vol. i. p. 621.
[4] Diseases of the Eye.
[4] Medical Record, vol. iii. p. 530.

Diagnosis.—In persons so young as these whose history forms the text of this paper, the diagnosis will not always be easy to make; first, from its comparative rarity, and second, from the youth of the sufferers, which would prevent the true character of the lesions from being appreciated. But in one of its peculiarities we are really furnished a means of detecting its true nature, viz., in its position.

Any ulcer seated upon the face, the character of which cannot be determined upon, should at once awaken suspicions of syphilis, no matter who the patients may be, nor their own or their friends' assertions to the contrary.

Syphilis is common to all ranks in life and to all ages, and the primary lesion may appear on any part of the body.

Another point of great importance, of more than any other, perhaps, in forming a diagnosis, is *to ascertain the condition of the glands nearest the lesion.* It not infrequently happens that the induration of the sore is absent or but slightly marked (*parcheminée*); in such a case the diagnosis is difficult. But it is very rare, indeed I may say it never occurs, that glandular induration and that of the ulcer are both absent at the same time. Go, therefore, to the nearest chain of glands for the information that the ulcer has denied, there the answer will probably be given.

There only remains one other point to speak upon, and that seems almost superfluous. I refer to the possibility of these cases being congenital. It is unlikely; first, because both parents were examined, were found free from disease, and denied ever having any. This, however, I have elsewhere shown, goes for very little, inasmuch as patients, at the time of the examination, may have arrived at the period of incubation, or repose between the disappearance of one train of symptoms and the advent of the next, and show absolutely nothing. The strongest proof against it lies in the lesions themselves; congenital syphilis does not commence with a primary lesion, nor does it lie latent for two years before declaring itself, and upon these grounds, if on no others, the question of their being congenital may be entirely disposed of.

16 WEST 32D ST., NEW YORK.

ART. X.—*A Case of Dermoid Tumour of the Cornea.* Reported by GEORGE STRAWBRIDGE, M.D., Lecturer on Diseases of the Eye and Ear in the University of Pennsylvania, Ophthalmic Surgeon to the Presbyterian Hospital in Philadelphia, etc. (With a wood-cut.)

MISS M. presented herself on account of a tumour of the left cornea, which was congenital and characterized as follows: Arising on the outer

lower quarter of the cornea, at a distance of three millimetres from the corneal edge, and having a diameter at its apex, which was rounded, of three millimetres. It extended on the eyeball between the inferior and external recti muscles, spreading out sufficiently to fill up the space between these two muscles, and passing beyond the juncture of the anterior and posterior segment of the eyeball.

The colour of the tumour at its apex was of a pearly-white, and in the median line, towards its base, the same colour prevailed, although gradually changing into a more yellow hue as the periphery of the growth was approached, where it finally became markedly yellow.

On the corneal portion of the growth a number of minute hairs were seen, four or five of which were of a dark colour and larger in size, while the remainder were entirely devoid of pigment. Several large veins traversed the growth at its base, and the mucous membrane covering it was thickened. (See fig.)

The increase in the size of the tumour had been very slow, bearing a relative proportion to the increase of the body, and its removal was desired principally for cosmetic reasons, and also with the hope that the eye, which presented some asthenopic symptoms, might be benefited.

The movements of the eyeball were entirely normal, and the acuity of vision in no way affected.

The removal of the growth was accomplished by a careful dissection of it from the surface of the cornea, made by a small Graefe cataract knife, the apex of the tumour being firmly grasped by a pair of forceps; great care was taken not to penetrate too deeply into the corneal tissue. This dissection was continued backward towards its base, until the tumour was well separated, and a pair of scissors divided the few remaining connecting bands.

Extreme toughness of the corneal portion was noticed, the knife cutting through it as through fibrous tissue, and at the same time it was found closely adherent, while, on the contrary, the sclerotic portion presented no difficulty in its separation. No great amount of bleeding followed its removal, and the after-treatment consisted in the application of a pressure bandage for four days, and then a green shade, and at the end of a week the patient was allowed out-door exercise. At the present time no trace of the growth remains, save a slight corneal opacity at its former seat.

Examination of the corneal portion of the growth showed all the characteristics of true skin, which became gradually lost in the sclerotic portion, which was made up to a great extent of adipose tissue.

Similar growths have been reported by a number of observers. Ryba,[1] in the year 1853, made a summary of the cases of dermoid tumour of the cornea reported up to that time, twenty-seven in number, occurring on the human eye, three on oxen's eyes, and four on the eyes of dogs.

[1] Ryba, Prager, Viertel Jahrschrift, 1853, Bd. iii. 1.

Tumours of this kind are also reported by Graefe,[1] Virchow,[2] Arlt,[3] Mackenzie, White Cooper,[4] W. T. Taliaferro,[5] Hulke,[6] and H. R. Swanzy.[7]

Dermoid growths were formerly known under the name of "warts," and confounded with many other forms of tumours. "They occur most frequently on the lower outer portion of the cornea, then on the upper corneal border, more rarely on the inner corneal border. Cases are also reported occurring in the scleral conjunctiva at the inner palpebral angle: as a rule, they will be found in the broad zone lying rather beneath the horizontal meridian of the eyeball than above it, in the direction of the zone of the lid commissure." (Ryba.)

They vary in size from that of a grain of pepper to a bean—round or oval in form, having a soft sponge-like consistence, or, on the contrary, they may be tough, and of a hardness like cartilage.

Their colour varies also greatly; the greater number are found to be of a white or yellowish-white hue, less frequently they are found red, reddish-brown, or very dark brown. Their surface is often smooth, or it may be like a raspberry or strawberry, lobulated, and with, or rarely without, a number of delicate, short, transparent, or sometimes coloured, hairs projecting from them. These growths consist of connective and elastic tissue, covered by a layer of thick epithelium, in which the hair follicle is placed; sudoriferous and sebaceous glands are often found together with fat cells. They are almost, without exception, congenital, and grow in proportion to the rest of the body. (Ryba, Fischer, E. Muller, Graefe, Ammon, Virchow.)

The origin of these peculiar growths, as they are always congenital, must be found to a great extent in the conditions attending the development of the fœtus. Ryba, who has spent much time in their study, gives the following plausible explanation:—

It is well known that the conjunctiva in early fœtal life corresponds in its texture entirely with the skin covering in general. That portion covering the eyeball becomes gradually thinner, and at about the tenth week, elevates itself, at the upper and lower orbital borders, into folds, which develop into two skin folds to form the rudimentary eyelids, and towards the end of the third, or commencement of the fourth month, they have widened themselves sufficiently to come in contact with each other and to entirely inclose the eyeball. For this reason it is clear why the median horizontal zone of the eye, in whose circuit these peculiar

[1] Archiv für Ophthalmologie, vii. 2, page 3, x. 1, page 214.
[2] Archiv für Pathologische Anatomie. Sechster Band. Heft. 4, 555.
[3] Arlt's Krankheitender Binde und Hornhaut, page 170.
[4] London Med. Gaz., Nov. 1841, page 278.
[5] Am. Journ. Med. Sci., July, 1841, page 88.
[6] Ophth. Hosp. Rep., vol. iii. p. 332.
[7] Dublin Quarterly Journal of Medical Science, May, 1871.

growths are always found, remains the longest uncovered by the eyelid. The general skin covering acquires its fully developed characteristics as fœtal life draws to a close, except the inverted portion of skin which develops into mucous membrane to form the conjunctiva. Now if we suppose a case where the two rudimentary lids do not finally widen sufficiently to form a covering over the eye, but leave an intermediate space where the eyeball is exposed, then at this point the membrane covering the eyeball will not develop into mucous membrane, but into a membrane resembling skin, and will fill up the gap between the eyelids by, as it were, a third lid; so that, by this explanation, the corneal dermoid might be considered an attempt towards forming a rudimentary eyelid. And Ammon and others have reported cases of coloboma of the eyelid, where a dermoid growth was found filling up the gap.

Treatment of these tumours.—They should be removed as soon as practicable, as they become larger, and, especially if covered with hair, act as irritants to the eye, and for this and cosmetic reasons their removal is indicated; and especially as the operation is not a difficult one, and is rarely followed by bad results. Care should be observed not to cut too deeply into the cornea in their removal, as from this cause corneal suppuration has occurred.

A slight corneal opacity is always left after the operation.

ART. XI.—*Treatment of Threatened Abortion by Hypodermic Injections of Morphia.* By A. B. ISHAM, M.D., of Cincinnati, Ohio.

IT is the design of this paper to treat the subject of threatened miscarriage from a clinical stand-point, where the hazard to the mother is remote, while the life of the fœtus is in imminent danger. All questions, then, not relating to the preservation of the offspring, are set aside.

Upon the question of preventing abortion after the occurrence of well-marked bearing-down pains, dilatation of the os or hemorrhage, authorities vary somewhat, though the weight of authority is indeed adverse to the chances of preserving the fœtus under the conditions considered; yet while many authors admit that our efforts in this direction may sometimes be crowned with success, it is the universal verdict that such result is exceptional. The only conditions generally acknowledged as hopeless are fetid discharges, and partial protrusion of the fœtus or its membranes through the os. Even in the former event, if the prospects be not favourable for a speedy expulsion of the womb contents, we may put a stop to uterine efforts, and indulge a very slight hope that fœtal life may not be destroyed;

for there is a possibility that the fetor may be due to other causes than the decomposition of the ovum. Upon this point Cazeaux well observes:—[1]

"For after all, whenever death of the fœtus must have been either the cause or effect of the primary symptoms, what do we risk in calming or arresting the uterine contraction? because, as we have already seen, the dead child may remain long within the intact membranes without any unfavourable consequences resulting to the mother. And besides, as it is impossible to ascertain its death with any degree of certainty prior to the fifth month of gestation, we must act in such doubtful cases just as if it were living."

I have preserved a record of seven cases of menaced abortion, in all of which there existed forcible uterine contractions, hemorrhage and dilatation of the os. In every instance the uterine contractions and hemorrhage were arrested and the os contracted from the administration of morphia, by the mouth and hypodermically, in full doses and at short intervals. In four cases the patients were carried to full term and voided fully developed children. In the three unsuccessful cases expulsion occurred in from three days to two weeks. In two of these cases there was found fetor of the discharges on first examination, so that they may be excluded from the count, as almost necessarily hopeless. Of the remaining cases four out of the five were successful, and of the four three were treated by hypodermic injections of morphia. These cases I submit in detail.

CASE I.—G., coloured, æt. 37; five months advanced in pregnancy. December 30, 1869, was kicked and struck in the abdomen by a man. Vomiting; severe and very frequent bearing-down pains; os uteri soft and dilated an inch and a quarter; rather free hemorrhage. Administered a hypodermic injection of ¼ gr. morphia, in twenty minutes another of like quantity, and in twenty minutes more the third, when the pains ceased and the patient fell asleep. Saw no more of her, but learned that she went to full term and was delivered by a midwife of a healthy full-grown child.

CASE II.—M. C., mulatto, æt. 32; mother of four children; four and a half months advanced in pregnancy. Previous to this pregnancy had had three miscarriages in succession at about four months. Saw her the morning of May 27, 1870. Stomach very irritable; vomiting and retching. Uterine contractions sharp and regular; os soft and dilated, the size of a half dollar; slight hemorrhage. Gave her two injections of ¼ gr. of morphia each, which suspended the pains. In the afternoon pains returned, when she was given two more injections with the same result as before. Uterus took on expulsive action again in the evening, when three hypodermic injections of ¼ gr. each were necessary to insure quiet.

28*th*. Made three visits, each time bringing the injections into requisition to govern uterine contractions.

29*th*. One visit, with two injections, sufficed.

31*st*. As the irritability of the stomach had subsided, and the pains were not severe, gave two morphia powders of ¼ gr. each by the mouth; after which no more trouble was experienced, and the woman was delivered at full term, October 16, 1870, of a healthy well-developed female infant.

Remarks.—Three miscarriages in succession had occurred to this woman,

[1] Theoretical and Practical Obstetric Med., 5th Am. ed., pp. 582-3.

doubtless produced by her own agency. Her discouraged husband was seriously resolved "to quit breedin' with her, 'cause she would drap 'em, spite of everything." She was averse to treatment in this instance, declaring that she did not want children, and, when not under the influence of morphia, notwithstanding repeated injunctions to keep quiet, she would persist in exercising herself.

CASE III.—Mrs. C., German, æt. 34; mother of two living children and two stillborn. Called to her April 26, 1871. According to her data there lacked about two weeks of full term. She was suffering severe bearing-down pains, accompanied with gushes of blood in considerable quantity. Os rigid and dilated just sufficient to pass the index finger. Could feel just through the os a thick pulpy substance, which was decided to be the placenta. Administered $\frac{1}{3}$ gr. morphia by hypodermic injection, which relieved the pains and stopped the hemorrhage. She was delivered May 3d, of a full-grown stillborn male child, by turning, with the aid of Dr. Keyt.

Remarks.—In the absence of any forcible uterine contractions the processes of dilatation and delivery were entirely manual. The placenta was implanted half way over the os, and the child perished from hemorrhage, for the fœtal heart sounds could be detected nearly up to the time of turning. In the first hemorrhage on the 26th of April the life of the fœtus was undoubtedly saved by the prompt exhibition of the morphia injection, and but for the uterine inertia the chances of its being born alive had not been altogether unfavourable.

My cases are only three, it is true. But, as in all the same treatment obtained, they may serve as good a purpose for comparison as a much larger number. Particularly so, as they were all of that class in which the highest obstetrical authority would expect failure; and when, from the employment of other means, in cases marked by symptoms very much milder, I have not a few times experienced failure myself.

All the advocates of opium, with the exception of Tyler Smith, Byford, and Tanner, advise its administration per rectum. This is likely because the irritable stomach so common in cases of threatened miscarriage may not tolerate so nauseous a medicine as opium. In the manner of administration may have been the small measure of success. It is well known that medicaments introduced into the rectum act in a very uncertain manner; and it will be readily seen how opium or its alkaloids, given per orem to a patient vomiting and retching, might fail to avert a miscarriage. Just where these means have failed and will fail again, is where the hypodermic injections would prove invaluable.

It is useless to enjoin quiet. The patient is not likely to be quiet, suffering the pains incident to uterine expulsive efforts, her mind perturbed by fears for her own welfare and that of her child. Too often, too, the fruit of conception is regarded as an incumbrance, which it would be happiness to lose, and constant activity is one of the most popular recipes to the

attainment of such end. Cold applications, leeching and blood-letting, would prove in most instances a waste of precious time, besides at this day such practice would be esteemed a barbarity, and not without some reason.

The prime elements of danger to the life of the fœtus are, *first*, muscular contractions of the uterus, and *second*, hemorrhage. The latter most commonly results from the operation of the former; but it matters nothing as to the many and various causes tending to produce these phenomena. Considerations of safety imperatively demand a speedy arrest of uterine muscular action and hemorrhage, securing which, we may go about investigating and correcting the causes with comparative leisure.

The use of morphia by hypodermic injection is the most speedy and certain means we possess of effecting such desiderata. It will do even more. Its influence spreads over the brain, and at the same time that it suspends contraction of the uterine muscular fibres it insures quiet and rest to the whole system, even against the patient's will. It is applicable to any case of threatened abortion, and I believe that its general use would render success at least equal, if not the rule, instead of the exception, as now announced by obstetricians. Of course I am aware that there are occasional individuals who do not well bear the exhibition of opium in any form, but I hold with Byford: "I do not forget, in thus speaking freely about the use of opium, that peculiarities in some persons make it almost useless; yet I remember the utter unreliability of other remedies in these cases, and risk such disagreements."[1]

ART. XII.—*Notes on Malarial Disorders of the Marañon Valley.*

By FRANCIS L. GALT, M.D.

IN an article which appeared in the No. of this Journal for April, 1872, the writer attempted to describe an epidemic of a malarial character which occurred at the village of Iquitos, Peru. The present "Notes" are intended to bear some relationship with that article, as showing some other of the unusual expressions of malarial disorders in the same section of Peru.

During the last year, or more correctly the last fourteen months, there has been noticed in this section, more especially in this village, an altogether exceptional amount of disease of a malarial character which has attracted the attention of medical and other observers; beginning from June, 1871, with an epidemic of catarrh, followed by another of "malarial colic" which appeared somewhat scatteringly during the rainy season from November to June, and which has at the present time here and there an

[1] Theory and Practice of Obstetrics, p. 171.

occasional representative, varied also by rheumatism and dysentery, both of a malarial type, and also occasional catarrhs and bronchial irritation. This unusual state of things has supervened without any change whatever in the agricultural development, such as clearing away of forest growth and upturning of the soil.

In this village a hasty and imperfect attempt at street cleaning has been tried some two or three times in the last eight months, but for the most part the original condition of pools and filth remains undisturbed. Nor has there been any immigration to this region to afford to unacclimated systems an opportunity for disease to show itself. The diet and modes of life continue the same all along the river, and it appears that we shall have to look in altered atmospheric conditions for the responsibility of the change in the sanitary character.

It is to be noted that the changes in the meteorological elements of health to be spoken of below have been such as to attract the attention of the most enlightened residents, as well as the dull though observant natives. During the last dry season the want of rain, especially in July and August, extending into September, was the topic of universal conversation as never having been experienced before in the Marañon Valley. The dry season commenced earlier than usual and continued later—from May to November, inclusive. This dryness was attended by unusual heat during the day, and chilliness during the night. The cool spell of some three or four days which occurs along the whole Amazon, appearing on the lower river about May, generally, and here in June, was not noted last year until the 27th of July. It is known in this region as the "*Inviernito de San Juan*," from its falling about the 24th of June generally, the time of the anniversary of the festival of St. John the Baptist, and is looked for with great certainty. I have been informed there that this cool spell has been appearing later for the last four years, and up to the present date, August 11, there have been no signs of it. The mercury last year fell as low as 19° C. during one day, and to 16° C. the same night—the lowest records made during the year; the yearly average of day temperature being 26° C. for the day, and 23° C. for the night.

The rise and fall of the waters of the Marañon have presented nothing unusual as regards height or depression within the last twelvemonth. The rainy season of 1871 and 1872 continued later than usual, the past June being altogether unusually noted for the rain-fall, as may be seen from the accompanying table. So late this year did the river remain at high water that the Indians, who generally commence turtling on the "plaias" (sand-beds uncovered by the falling waters) about the first of June, have even up to this date not found much opportunity for pursuing their vocation.

It is also to be noticed that the months of June and July this year have been much more healthful than for the corresponding period last year.

There having been, previous to April of last year, no records of weather

kept on the Marañon, it is impossible to make any accurate comparison of meteorological differences as regards relative frequency of winds and storms, barometric pressure, humidity, and rain-fall, though it is probable that the characteristic uniformity of weather in this intertropical district has not been very greatly modified.

The accompanying table is a summary of observations taken by the writer daily at Iquitos for the period therein stated. The observations were taken each day at 9 A.M., 12 M., 3 P.M., and at 9 P.M. The lowest night temperature was recorded by a self-registering spirit thermometer. Under the headings "Direction of Winds" and "Storms," when the number of either was from two points equally, as regards frequency, both are inclosed in brackets.

The "Rainy Days" include all on which any rain whatsoever, no matter how light the shower, fell.

Months.	Year.	Av. thermometer.	Av. barometer.	Av. Wet bulb.	Direction of winds.	Direction of storms.	No. of rainy days.	Highest daily av. of ther.	Lowest daily av. of ther.	Highest record of ther.	Lowest record of ther.	Highest daily av. of bar.	Lowest daily av. of bar.	Highest record of bar.	Lowest record of bar.	No. of inches of rain.	Lowest temp. at night.
April	1871	26.8	75.42	24.5	N.E.	{S.E. N.E.	17	27.5	24.4	29.3	23 6	75.59	75.31	75.74	75.12		
May	1871	25.2	75.49	23.6	S.E.	N.E.	13	27.4	24.2	30.2	22.7	75.74	75.33	75.86	75.12		
June	1871	25.8	75.57	23.1	N.E.	N.E.	16	28.1	24.3	29.4	23.0	75.72	75.44	75.80	75.26	3.13	
July	1871	24.8	75.62	22.9	S.E.	S.E.	11	28.1	19.4	29.5	18.8	75.94	75.43	76.12	75.32	4.27	
Aug.	1871	26 1	75.53	23.6	S.E.	{N.E. S.E.	10	28 1	20.7	30.4	19.6	75.71	75.30	75.88	75.09	3.94	
Sept.	1871	26.6	75 50	23.8	S.E.	{N.W. N.E.	8	29.6	24.0	32.4	23.4	75.71	75.27	75.83	75.08	9.33	
Oct.	1871	27 0	75.37	24.6	var.	N.E.	16	28.7	24.4	31.0	24.4	75.50	75.20	75.66	75.03	7.57	
Nov.	1871	27.1	75.31	24.8	N.W.	N.W.	12	29.0	25.8	31.8	23.9	75.45	75.06	75.62	74.96	8.42	
Dec.	1871	26.6	75.44	24.2	N.W.	{N.W. N.E.	14	29.1	24.5	31.4	23.4	75.65	75.26	75.77	75.18	11.45	
Jan.	1872	26.3	75 42	25.0	var.	N.W.	19	28.2	24.7	30.6	23 8	75.57	75.26	75.78	75.14	10.23	23.3
Feb.	1872	26.7	75.37	24.8	var.	N.W.	16	28.8	24.7	31.3	22 3	75.58	75.20	75.69	75.05	9.86	23.2
Mar.	1872	26.0	75.43	24.2	{S.E. var.	{N W. S.E.	19	28.2	23.6	30.4	23.2	75.59	75.21	75.74	75.08	16.00	23.3
April	1872	26.3	75.44	24.3	S.E.	N.W.	15	28.7	22.3	31.0	21.4	75.67	75.13	75.80	74.99	8.93	23.1
May	1872	25.7	75.56	23.9	var.	S.E.	19	27.8	23 6	30.2	22.0	75.77	75.26	75.93	75.16	9.99	22.9
June	1872	25.0	..	23.4	S.E	S E.	20	26 9	22.4	29.0	21.4	..	..	..	..	11.77	22.3
July	1872	25.2	..	22.9	N.W.	S.E.	14	27.0	23.1	29.9	21.0	..	..	..	..	8.87	21.6

N. B.—Commenced taking rain-fall, June 1, 1871.
" " night temperature, January 1, 1872.
Barometer was put out of order May 30, 1872, and could not be used further.

This "table" embraces the period in which the greater amount of malarial disease has attracted the attention of the observer here and at other points on the Marañon, though, as before stated in the past months of June and July, as also up to the present date, there has been a great difference as regards amount of disease as compared with last year. Within this period there seems to have fixed itself at this point and at neighbouring places some cause for development of malarial fevers, which has, with-

out precedent, attracted the notice of the medical man. And though there are occurring frank cases of intermittent fever the malarial presence seems to show itself joined with dysentery, rheumatism, bronchial irritation, or complicating some form of skin disease with which the natives of this region are so plagued.

From what I have been able indirectly to learn, the condition of health on the lower Amazon has, in the last year or two, also undergone some change, and lately, at some of the towns near the mouth of the river, especially at Camata, on the north side near the sea, there has prevailed a great amount of malarial disorder. In the last-mentioned place, this epidemic of fever has had conjoined with it a scarcity of food and medical aid, which desolated the unfortunate town; the type of fever being simple intermittent, the disastrous mortality was accounted for by the want of proper nutriment and drugs rather than as the result of any virulence in the disease itself.

The government physician here in Iquitos, who has charge of all the medicines used in the place, tells me that he has had to use much more quinia in the last eight months than in the whole of the previous two years; this is exclusive of a goodly amount which persons trading or travelling about this region, or foreign employés, may have consumed out of their private stock.

It is at the present time almost a rarity to see a case of disease of a purely medical nature in which it is not necessary to use the antiperiodic. Just now, when the greater changes of day and night temperature, together with the dryness of the air comparatively, is inducing catarrhs and rheumatic affections, quinia is constantly necessary to effect a cure; these complaints not being severe enough to lay the patient up in bed, but annoying him a good deal, and generally attended with intermissions very well marked. Facial neuralgias are common, and yield to nothing but quinia. Losses of blood by casual wounds or hemorrhagic discharges have recently shown a strange disposition to have these rheumatic disturbances manifest themselves during recovery, arising from the greater susceptibility of the system prostrated and exposed to malarial action. It has also been noticed recently that quinia, though it relieves the patient of the presence of the morbid action, does not cure the individual, he being repeatedly attacked within brief periods of time. In the case of the crew of one of the government steamers, now undergoing repair at the bank, some forty feet below the village level, all of them who have been living on board have had more than two attacks of regular intermittent fever since last March. Such a state of things among the crews of the four steamers here, all of which have at various times been laid up repairing, has not transpired since this was made a government station in 1864. Among those attacked are persons who have lived on the Marañon all their lives without ever being sick, though, as far as can be gathered from

the rather ignorant subjects to be dealt with, probably the majority have at some previous time had intermittent fever in the highlands along the watercourses of that region.

The malarial complication in diseased states will manifest itself sometimes in rather whimsical modes. Pain will locate itself in a muscle or joint, remaining there, becoming greater or less, unattended by marked fever or chilliness, and requiring quinia for its removal. A cutaneous eruption will become heightened or more faint at stated times, and demanding the same mode of treatment. A cough will prolong itself for days or may be weeks, defying the routine treatment by anodynes and expectorants until quinia is conjoined, the use of which may be suggested by increased disturbance at night. It may be mentioned that acute inflammatory disease of the lungs is excessively rare here, though bronchial irritation of apparently a nervous character is not uncommon, and phthisis is most rapidly fatal, surprising both the medical attendant as well as the friends by a fatal result when least looked for.

Probably the most frequent sequela of the action of the malarial poison in this region is dysentery, and sometimes this will be the first mode in which the poison shows itself, though more frequently the patient will have had genuine attacks of intermittent fever without disordered bowels at varying intervals previously, and in another part of the country. It is frequently attended with dropsical effusion into the tissues, and that early in its progress. Instead of dysentery there is often diarrhœa, with watery evacuations, attended with little febrile disturbance, and disappearing and returning at intervals; often they do not apparently damage the system unless some intercurrent complication should arise. The malarial dysentery is to be distinguished from that which is frequently encountered in this region, among the half-breeds especially, arising from the pernicious habit of dirt-eating—a vice so wide-spread in intertropical America. In this case the dysentery is almost always fatal, as it comes on months, or may be years, after the person has been indulging in the habit, and when moral degradation, united to almost complete physical incapacity for the bowels to perform their functions aright, makes treatment generally unsuccessful.

The dirt-eater is to be distinguished by his sallow, pallid, bloated face, swollen abdomen, thin shanks, and by a certain hebetude of mind, or a look as though partially ashamed of himself, which is quite characteristic among the grown-up victims of the vice; the child, who is also a dirt-eater, reminds one of the rather depressed form of humanity among the ignorant lower classes to be found among rural and coast districts of our southern country—wormy, yellow, and half-fed; though the tropical young geophagist is rather a sprightlier character.

In the malarial dysentery there is more febrile action and generally more abdominal pain, and this fever is somewhat regular in its appear-

ance, and the complaint is only to be gotten rid of by the use of antiperiodics. In the other form of dysenteric complaint, there is occasionally fever, though perspiration is somewhat rare, and the patient has more appetite than the malarial sufferer; his tongue is blanched, tremulous, and deeply marked by the teeth; nor does there seem to be produced that peculiar odor which may be noticed emanating from subjects attacked with malarial dysentery after they have been sick for some time.

The treatment of malarial dysentery here is somewhat unsatisfactory, owing to the utter absence of anything like a proper diet for the sick; besides this there is among the natives, and often the half-breeds, a stolidity of character, joined with an unwillingness to have faith either in the medicines or the white man who directs their administration. Still, with all these drawbacks, this form of disease is comparatively easily managed, and when taken in hand early does not often resist medication, though after anasarca has appeared the result is for the most part unfavourable.

When it can be done, a change of climate from this *Montaña* ("wooded district," the name by which the lowland country of Peru is known) to the bracing and healthful regions of Chachapeyas or Cajamarca in the mountains has a most happy effect in completing the cure of these malaroid derangements. From my own rather small observation of these malarial disorders, I have noticed that persons who have taken on the various forms of sickness higher up in the interior, about the watercourses in the region of Moyobamba or Tarapoto, after coming here to the *tierra caliente*, are much more annoyed and are treated with much more difficulty as regards prospect of cure than those who are attacked *ab origine*, as it were, in the lowlands of the Marañon. The great uniformity of temperature and moisture of the Montaña appears to be a preservative of health, and a preventive of violent manifestations of marsh poisons; while the variability of the more elevated districts where the days are hotter, the nights cooler, and the air is much drier, seems to be decidedly more unfavourable to any one attacked by ague and fever. In the malarial disorders here it is not often necessary to give more than ten or twelve grains of quinia per day, the large quantities used in our pernicious fevers I have never known to be given. The grade of febrile excitement is for the most part slight, and the greatest amounts of the antiperiodic are generally necessary where there is great display of apparently pure nervous derangement manifesting itself in the colics and other neuralgias which are so rife; this abnormal nervous expression is partly to be accounted for also by the well-recognized greater susceptibily of the nervous system in tropical countries.

Enlargements of the spleen are to be noticed here, though by no means constantly, nor does the organ increase its size in any conspicuous degree; in fact the symptom as one of malarious cachexia does not often attract the especial notice of the physician, and I have seen no case where the organ attracted the attention of the patient himself. We now and then

hear vaguely that some village on the river has had a "peste" (a general name for any epidemic) prevailing with some loss of life, and occasionally inquiry will suggest the idea of violent malarial fevers, though the means of information are rarely very trustworthy, and mortality may be frequently accounted for by an entire absence of assistance, and the well-known indifference or dislike of all ignorant races to assist their kindred in times of plague of whatever sort.

During my stay in Iquitos, now some two years, I have seen only two fatal cases of malarial poisoning: one, an Indian youth, who was severely attacked, and who died in three days, with what seemed, as far as I could learn from his friends, to be congestive fever. He was taken sick some miles below here on the river. He was visited here by a physician too late for any medication to be adopted with any prospect of success. The other case was that of an Indian girl who was attacked with a "malarial colic" during the epidemic here in 1871, and who had, after the force of the plague had disappeared, repeated attacks of the symptoms, which resisted all treatment, and she seemed worn out with the violent paroxysms of abdominal pain and prostrating nausea and vomiting.

These are the only two fatal cases resulting from malarial action in the last three years according to what I have been told. There has been no fatal case of dysentery excepting as the result of dirt-eating, nor from rheumatic disease or bronchial irritation.

The very large proportion of the mortality here is among infants who are the victims of convulsions to a notable and fatal extent in this section, though no observation has been made to link these convulsions with malarial causes directly.

At this place itself the intermittents in the last two years have appeared for the most part among the Indians, the whites being rarely troubled; yet of the obscurer forms of malaroid action, such as neuralgias, there have been, proportionately to numbers, quite as many, or more, foreign and white patients as natives of the valley. Among the traders, however, who are much exposed for weeks, these open forms of fever are sufficiently frequent, though I have not heard of a single fatal case among them since being in this section of Peru.

The people of the country have no herb which they use with a direct view of cutting short these accessions of malarial poison, though there are a great number which they employ as sudorifics to abate their troubles.[1]

[1] It should be mentioned as a notorious fact on the rivers that the pure blooded Indian perspires very slightly. In proportion as his blood becomes whitened by cross-breeding, this physical manifestation is more to be remarked. Another fact is that the negro—full-blooded—of the Amazon borders has very little of that peculiar and well-marked odor which distinguishes him in our country. The negro is also a much more positive character in every respect than the copper-coloured native of this great valley, is able to do more work, does it more intelligently, resists disease better, does not break down by exposure, and is altogether a superior

The traders on the river and foreigners coming into this country generally bring with them quinia as a part of their outfit. The scarcity here now of this drug is such as to raise the price of it in the place to ten dollars per ounce, and it is difficult to get persons to part with it even at that figure.

IQUITOS, PERU, August 16, 1872.

ART. XIII.—*A Contribution to the Comparative Distribution of Bloodvessels in the Membrana Tympani.* By CHARLES H. BURNETT, M.D., Aural Surgeon to the Philadelphia Dispensary, and to the Presbyterian Hospital in Philadelphia. (With a wood-cut.)

IN a series of investigations upon the membrana typani of the mammalia, I have found in the dog, the cat, the goat, and the rabbit, an ar-

creature. This, however, must be noticed in favour of the Indian, that the negro, either of Peru or Brazil, which latter country is the one from which most of the blacks come who are found here, having been for many years or generations under the intelligent and compulsory instruction of a master, has had his wits sharpened, while the Indian has been and continues to be among the forgotten and to-be-suppressed races of the earth wherever he is found. The antiquities of Peru show that the then existing Indian race was a capable one when governed by a powerful centralized authority, and in the last days of the despotic Incas there was no lack of intelligence and force of character in the representative of the line even though it was a severely strict law and observed custom that each Inca could only marry with his sister by which he transmitted to his descendants the princely blood untainted by plebeian mingling.

Another difference of the Indian here and the negro is the ability of the former to stand pain in cases of wounds or surgical interference where the black will either through fright or sensitiveness shrink with dread.

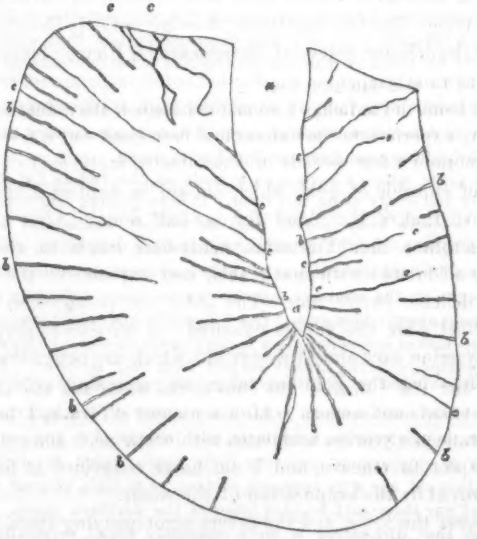
There is no place where I have seen wounds on the Indian (or other native) heal so rapidly and easily as on this river. It is surprising sometimes to see the most hacked-to-pieces body recover from its wounds which may have been received from a fight or fall. The stoical indifference with which the red native will have himself sewed up after one of these encounters is worthy of all admiration. The negro, on the contrary, has his nerves more delicately set, and is a loud complainant about trifles even. The "*Zambo*"—the cross between the Indian and the negro—makes somewhat of an improvement on either original, while it is a healthful product, differing in that respect from the "*mulatto*." The offspring of the white and the "*Mestizo*," the cross of the white and the Indian, is the breed of inhabitant most common in the eastern part of Peru, and they are a very sprightly race, though volatile, impetuous, and indisposed to any continuous system of labour or employment, enjoying their youth, which develops early, and disappearing into old age with apparent content, or at least without the growling propensities of our more cold-blooded types of the northern races. It is among this last class that dirt-eating is more commonly found, especially among the children. Leucorrhœa prevails extensively among the women. I do not know of more than two or three females of this race here in the village who have not this disorder more or less marked.

rangement of the bloodvessels not heretofore described, and totally different from that in man.

Prussak (*Verhandlungen der Königlich Saechsischen Gesellschaft der Wissenschaften zu Leipsic*, 1868), in his brochure upon the circulation of the blood in the tympanum of the dog, has represented the general topography of the vascular system in the membrana tympani of that animal, but he does not point out the ultimate *loop-like* arrangement of the vessels distributed over the surface of the membrane. The plate which accompanies his article seems to indicate that the delicate vascular loops have been broken by the force of injection, and thus escaped the eye of the observer.

In my investigations I have found that from the periphery of the membrane a series of vessels run directly towards the manubrium of the malleus; then each vessel, at a point from one-half to one-third of the distance between the periphery of the membrane and the manubrium of the malleus, turns *abruptly* upon itself and returns to the periphery, thus forming a series of *vascular loops* at nearly equal distances from each other around the edge of the membrane.

A similar series of loops run both anteriorly and posteriorly from the manubrium of the malleus towards the periphery of the membrana tympani—a diagram of which may be seen in the accompanying wood-cut, representing the membrana tympani of a dog magnified eight diameters.



Membrana tympani of dog. The wood-cut is from a drawing by Heitzman, of Vienna, of a gold preparation made by and in the possession of the author: *a*, *a*, Vacancy left by manubrium of malleus; *b*, *b*, *b*, *b*, Vascular loops; *c*, *c*, Ordinary capillaries.

This arrangement of vessels in the membrana tympani is constant in the dog, the cat, the goat, and the rabbit, in consequence of which a portion of the membrane between the annulus tympanicus and the manubrium of the malleus remains free from capillaries in its normal condition, and ordinary disturbances in the circulation are less likely to interfere with the vibrations of the membrane.

These vascular loops do not exist in the Guinea-pig, an animal which has in its membrana tympani an arrangement of vessels peculiar to itself. The general appearance of the membrana tympani of the Guinea-pig, under the microscope, is much more transparent and delicate than that of any of the previously mentioned animals.

The vessels are arranged in the form of a net, with coarse mesh of quadrangular or pentagonal shape. The radiate fibres are strongly developed in comparison with the circular fibres, which are sparsely distributed throughout the texture of the membrane. They are, however, readily seen, and present an appearance as peculiar to the membrana tympani of the Guinea-pig, as the shape of the mesh of the net-work of bloodvessels. In no other membrane have I seen as distinctly the blood corpuscles lying within the capillaries as in that of the Guinea-pig.

The membranes which show these loops and other vascular arrangements most distinctly are such as have been coloured with a solution of the chloride of gold (½ per cent.). The vascular arrangement can be seen, but not very satisfactorily, in membranes which have been treated with osmic acid or a solution of carmine. The best specimens, showing not only bloodvessels, but in many cases the delicate nerves of the membrane, I have obtained by preparing the membrana tympani of the dog in the following mannner: Remove the membrane from the animal as soon as possible after death. (In the majority of my experiments the animal had been dead but a few minutes.) Steep the membrane a few seconds in concentrated acetic acid; then lay it in a solution of chloride of gold, which should be kept at a temperature somewhat above that of the blood, for one-half hour. After this treatment, the membrane should remain twenty-four hours in glycerine, or water slightly acidulated with acetic acid, and exposed to the light till it assumes a delicate purple hue. The older the preparation becomes, the more distinctly are the vessels coloured. I have some preparations, mounted in glycerine, now almost a year old, which are better than the day they were made—since the gold has taken an increasing hold upon the tissues of the vessels and nerves. After a number of trials, I prefer leaving the membrane in glycerine acidulated with acetic acid, since it demands less care in respect to renewal, and I am never chagrined at finding my specimen destroyed by the evaporation of the water.

By this process the *loops*, and the nerves accompanying them, are most likely to be rendered visible.

The arrangement of the nerves, not represented in the wood-cut, is best

described as "fork-shaped." The prongs embrace the loop; the handle unites with a similar projection from the opposite series of loops. As a rule, the vessels colour more readily under the action of chloride of gold, than the nerves.

How this might be in clear weather, I am not prepared to say, as all of my experiments were performed in the cloudy weather of a Vienna winter, notwithstanding which, the nerves frequently became richly coloured.

This method of colouring vessels and nerves I have applied only to the membrana tympani, and hence, I can claim no superiority for it in connection with other tissues. When it succeeds, it is superior to any injection of this very delicate membrane, since the vessels and nerves are rendered visible with a distinctness characteristic of the action of chloride of gold, a reaction to which our attention was first called by Cohnheim.

The bloodvessels are rendered distinct, without becoming opaque, so perfectly in most cases that we can detect the blood corpuscles lying within the capillary.

The vessel, furthermore, retains its normal calibre and position, whereas, when we resort to injections, the vessels are apt to be unduly distended, are necessarily opaque, extravasation of colouring matter may take place, or the vessel may be ruptured.

The method is more convenient than injection, and as no mechanical force is used, the field of the microscope must of necessity present a very true picture of the tissues as they are in their normal state.

The application of this method of colouring to the membrana tympani of man shows the *absence* of the vascular loops, already described, and reveals an arrangement of the vessels similar to that obtained by other observers with injections.

The arrangement of the vessels is not unlike the vascular net-work in the membrana tympani of the Guinea-pig. In man, however, the mesh is much finer, the vessels coarser. The fibrous layer is, on the other hand, very thick, and is more equally composed of radiate and circular fibres than the membrane in the Guinea-pig.

Since the membrana tympani of man is supplied by a dense net-work of vessels, the gold method of colouring it is superior to the usual method by injection, as the entire preparation is less opaque than when the vessels are filled with Prussian blue, carmine, etc.

We may, therefore, conclude that:—

1. There is a distribution of vessels in the membrana tympani of man peculiar to him.

2. There is a distribution of vessels in the membrana tympani of the dog, the cat, the goat, and the rabbit, constant in, as well as peculiar to them.

3. A distribution of bloodvessels exists in the membrana tympani of the Guinea-pig peculiar to it.

ART. XIV.—*Three Cases of Renal Disease in Children, probably caused by Malaria.* By SAMUEL C. BUSEY, M.D., Physician to the Department of Diseases of Children at the Columbia Dispensary, and one of the Physicians to the Children's Hospital, Washington, D. C. (Read before the Clinico-Pathological Society, Dec. 11th, 1871.)

CASE I. *Amyloid Degeneration of the Kidneys.*—William H. W., black, aged 15; teamster on the Chesapeake and Ohio Canal; admitted to the Children's Hospital, Sept. 18th, 1871. Symptoms on admission: scrotum and penis enormously swollen, œdematous; some pitting about both ankles. The scrotal swelling began about a month previous to admission. Had occasionally had some swelling about the eyes, none now; and several times had thought his belly swelled. Never had any pain. Never had been sick before. Slept well; but was compelled to empty his bladder three or four times every night. Tongue clean, very small, and pale. Buccal mucous membrane markedly anæmic. Pulse small, feeble, 72 per minute; skin dry and harsh; much emaciated and very feeble. Did not think he passed a very great quantity of urine or drank more than usual. Bowels constipated; a stool at irregular intervals, sometimes a day or more intervened. No appreciable enlargement of liver or spleen; no pulmonary affection; second sound of heart quickened and more distinct; temperature 98. Ordered to bed; no medicine. Meat diet, which, in this institution, consists of bread, butter, and milk for breakfast; mutton or beef, with potatoes, for dinner; tea, same as breakfast, and supper, several hours later, of gruel.

During the subsequent twenty-four hours he passed 256 ounces of pale, straw-coloured urine, resembling diabetic urine. No sugar could be detected; albumen one-third. Microscopic examination, for which I am indebted to my friend and colleague, Dr. W. W. Johnston, exhibited considerable epithelial cells, some undergoing fatty metamorphosis; no casts. Liquid consumed during twenty-four hours estimated at 90 ounces.

Sept. 25. Œdema of scrotum and penis entirely gone; no pitting about the ankles. The dropsical effusions had been gradually disappearing since ordered to bed.

28*th.* Bowels moved several times, occasioned by a dose of potass. bitart. administered the night previous. Ordered ferri et quin. cit. gr. vj. ter in die.

29*th.* Urine passed during twenty-four hours, 80 ounces; albuminous. Microscopic examination of blood disclosed considerable increase of white corpuscles, twenty being counted in a single field, whereas but two could be seen in a single field of two specimens taken from healthy individuals. The rouleaux formation of the red was disturbed, though not forming the "series of long oval bodies," as described by Stewart.

30*th.* Passed 56 ounces; sp. gr. 1012; no relative diminution of albumen, though the aggregate quantity must be very much lessened. Gets up once during the night to urinate. Microscopic examination showed no change. Feels much better, has gained much in strength, more cheerful. Tongue and lips less pale. Is permitted to walk about the ward and to go to the dining-room to his meals. Treatment continued.

Oct. 5. Passed 128 ounces; less albumen; no casts.

10*th.* Passed 66 ounces; sp. gr. 1014; albumen very much lessened.

14*th.* Passed 53 ounces; sp. gr. 1015; less albumen. The patient had

so decidedly improved in appearance and condition, feeling quite well and strong, with good appetite and cheerful, that he was transferred to the "out-door" department, and did not subsequently return.

The causal and concomitant complications of this particular form of renal disease were absent in this case, yet there can hardly exist a doubt as to the correctness of the diagnosis. The quantity, colour, low specific gravity of the urine, excessive albuminuria, great thirst, marked anæmia, emaciation, leucocythæmia, dryness and harshness of the skin, dropsical effusion, and fatty epithelial cells are sufficiently characteristic even in the absence of the waxy casts, the ordinary causes and concomitant complications.

The fact of pre-existing malarial disease could not be established, but the circumstance of his employment as a teamster on the Chesapeake and Ohio Canal, which exposed him to malarial influence, recognized as especially intense and virulent, seems, in the absence of the usual causes to render this relation of cause and effect, at least probable.[1] He was, at the same time, subjected to many hardships and subsisted upon the coarsest food, perhaps, also, in insufficient quantity. Though no hopes were entertained of his ultimate recovery, his improvement was marked and decided.

The absence of the characteristic tube casts may, perhaps, be explained upon the assumption that, as the disease, according to Virchow, Stewart, and others, first attacks the Malpighian tufts, thence in succession (Green) the afferent, efferent arteries, arterioli rectæ of the Malpighian pyramids, inter-tubular tissue of the cortical substance, and, finally, the convoluted tubes, the dealkalized infiltration had not invaded the tubuli, though the presence of epithelia, some undergoing fatty metamorphosis, showed that the process of desquamation had commenced, and that the tubuli were not wholly free from disease.

CASE II. *Desquamative Nephritis.*—Ellen W., white, aged 9 years; admitted to Children's Hospital Oct. 17th, 1871.

History.—Was taken sick a month previous with chills, quotidian, lasting two weeks. Has had fever without chills for past two weeks. Began to swell a week before admission, first in her face, then belly, and afterwards in her feet and legs. Appetite good; diet bad; no meat, mostly tea and bread; occasionally vegetable soup. Sleeps badly; "smothers with a cough," which she has had for two weeks. Bowels regular. Lives in a malarious district.

Symptoms on admission.—Very anæmic; feverish. Pulse small, very frequent; tongue pale; appetite good; bowels regular. Face swollen; feet and hands œdematous; general anasarca; ascites. Urine of light colour; sp. gr. 1026; very albuminous. Ordered hydrochlorate of quinia, gr. iij. every two hours; broth diet, which consists mainly of bread and butter, with milk, and beef or mutton broth at dinner.

19*th.* Less ascites; œdema in lower extremities diminished; none in arms, less about face. Microscopic examination of urine of to-day exhibits

[1] Stewart records two cases not preceded by pre-existing disease.

granular and hyaline casts, with scattered epithelial cells; no more fever. Suspended quinia and ordered ferri et quin. cit. gr. v. ter in die. Diet continued.

20*th*. Urine passed in twenty-four hours, 30 ounces; colour improved; less albumen.

21*st*. Urine 16 ounces; sp. gr. 1020; apparently more albumen. No appreciable enlargement of liver or spleen. Microscopic examination of blood shows increase of white corpuscles, nine in one and five in another field. Rouleaux formation somewhat disturbed, sometimes presenting a mass of corpuscles, without any definite arrangement.

22*d*. Urine passed, 24 ounces; sp. gr. 1020; less albumen. Bowels moved freely, from a dose of potass. bitart.

23*d*. Urine passed, 24 ounces; sp. gr. 1020; less albumen. Ascites and œdema entirely gone.

24*th*.	24	ounces;	sp. gr. 1016;	slightly albuminous.
25*th*.	24	"	" 1020;	smoky.
26*th*.	24	"	" 1024;	"
27*th*.	26	"	" 1018;	less smoky.
28*th*.	24	"	" 1018;	"
30*th*.	21	"	" 1026;	a trace.
31*st*.	20	"	" 1026;	not a trace.
Nov. 7.	11	"	" 1030;	no albumen.
8*th*.	20	"	" 1030;	"
9*th*.	28	"	" 1030;	"
10*th*.	19	"	" 1028;	"

11*th*. Patient discharged, presenting all the conditions of health.

The cough, so aptly described by her mother, was due to pulmonary œdema, and, diminishing gradually with the subsidence of the dropsical effusion, ceased entirely upon its disappearance. At first she could not lie down, and slept in a half recumbent posture.

Adopting the nosological arrangement of Johnson, this was a well-marked case of desquamative nephritis, though the granular and hyaline casts indicate that the disease had advanced beyond its acute stage. Adopting that of Grainger Stewart, which is more simple and definite, it was the inflammatory form of Bright's disease. In a *résumé* of the clinical history of this form, he says, at page 15, micturition is frequent, quantity of urine diminished, sp. gr. is lessened, amount of albumen large. "The face, the legs, or the scrotum, or all of them together become œdematous, and the œdema more or less rapidly increases and extends. There is at the same time some degree of febrile disturbance, the breath may be interfered with, and the patient may complain of headache and drowsiness. On microscopic examination of the urinary deposit, it is found composed mostly of tube casts," which present considerable variety. Some are composed "entirely of granular epithelium." "Others are granular, the outlines of the cells only recognizable on very careful examination; others contain more or less hyaline material mingled with and connecting together granular cells, and some are found in which blood corpuscles, in varying quantity, are present."

The symptoms on admission, the microscopic appearances of the urine, and the clinical history, considered altogether, complete the picture of a

well-marked case of this form of Bright's disease. The presence of scattered epithelia indicates that the disintegration of the epithelium occurred subsequent to desquamation, and that the casts containing tubuli were not entirely denuded of their epithelium. In such cases the prognosis is very favourable.

CASE III. *Hyperæmia of the Kidneys.*—William H. M., black, aged 4 years; admitted to Children's Hospital Nov. 6th, 1871. Began to have chills early in July, has them now, every other day. Commenced to swell about a month ago; slight puffiness about the eyes; both legs œdematous; much emaciated and very anæmic, feeble, dull, indisposed to talk. Not confined to bed, but no disposition to play with other children. Pulse small, hardly perceptible at the wrist; tongue pale, but clean; prolabia very pale; bowels regular; appetite poor; diet bad. Ordered quin. sulph. gr. iij. every three hours, and broth diet.

Nov. 7th. Urine passed in twenty-four hours, 10 ounces; sp. gr. 1026; very albuminous; no casts or blood-corpuscles.

8th. 23 ounces; sp. gr. 1026; no albumen. No chills since admission. Discontinued the sulphate and ordered ferri et quin. cit. gr. iijss. ter in die.

9th. 11 ounces; sp. gr. 1030; one-half albumen.
10th. 8 " " 1026; " "
11th. 9 " " 1024; " "
12th. 12 " " 1022; less albumen.
13th. 5½ " " 1030; albumen increased; ordered a diuretic.
14th. 8 " " 1024; no albumen.
15th. 14 " " 1024; "
16th. 12 " " 1018; "
17th. 14 " " 1020; " Dropsical effusion entirely disappeared; discontinued diuretic.
18th. 10 " " 1030; "
19th. 9 " " 1024; "
20th. 10 " " 1030; slightly albuminous.
21st. 6 " " 1030; no albumen.
23d. 11½ " " 1024; "
24th. 16 " " 1024; "

This child was discharged Dec. 4th, apparently in perfect health. No albumen was discovered in his urine after Nov. 20th, though it was carefully tested daily to day of discharge. The urine was uniformly acid. On Nov. 29th, a copious sediment of urates appeared, but did not recur. The broth diet and citrate of iron and quinia were continued until discharged. On January 4th, 1872, he was readmitted. The ascites and œdema had reappeared. He was very anæmic, with constipated bowels. He had continued well until exposed to the cold, then sickened, and grew worse daily. Urine was scanty; sp. gr. 1021; one-third albumen; no casts. He was placed upon the same treatment. The albumen did not entirely disappear from the urine until January 21st, and his temperature continued slightly elevated, always highest in the afternoon, until 25th. During this period he had several chills. He was discharged well April 28th, having been retained long enough to establish his cure, and has continued well since.

I am not quite satisfied that this was a case of simple hyperæmia. Even after the subsidence of the dropsical symptoms and disappearance of the albumen, the urine continued scanty. During Nov. 14th the amount

passed was 8 ounces; 19th, 9; and 21st, 6 ounces; and only once during his first admission did it reach 23 ounces. The specific gravity was never lower than 1018, during which day 12 ounces were passed; and on the 18th, 20th, and 21st, it reached 1030, 10 ounces being passed during the 18th and 20th, respectively; and 6 ounces during the 21st. The amount of solids, calculated by Golding Bird's tables, exhibited several very sudden and considerable variations. At no time, either during his first or second admission, were casts discovered in the urine, nor did the microscopical examination of the blood disclose anything abnormal. When finally discharged he was passing daily about 28 ounces of urine.

The clinical history of this case impresses me with the belief that there existed something more than hyperæmia. Bouchut asserts, that "albuminous nephritis is an organic affection of the kidneys." Rosenstein holds that albumen may result from congestion, but in cases of long standing alterations of structure occur; and Stewart maintains that in similar cases indurations of the organ take place. Niemeyer says, "scanty, concentrated, dark-coloured urine" containing albumen is the evidence of obstructive hyperæmia; while Liebermeister asserts that the presence of albumen alone excludes the idea of simple engorgement and indicates the existence of inflammation. It would seem that the numerous experiments by Duges, Velpeau, Lee, Cruveilhier, Stokes, Blot, Leudet, and others, of obliteration of the renal veins, resulting in albuminuria, would settle the question, at least so far as regards obstructive hyperæmia. Robinson obtained albuminous and bloody urine by ligating the renal veins of a cat. Frerichs repeated Robinson's experiment, with similar results, and, in addition, obtained fibrinous casts. Johnson insists that a morbid condition of the epithelium is first in the order of pathological phenomena. Niemeyer maintains that fluxionary hyperæmia will not alone produce albuminous urine, and his assertion that "ligation of the abdominal aorta below the origin of the renal arteries, in spite of increased pressure which ensues in these arteries, never results in albuminuria," is directly contradicted by Marshall, who says: "When the aorta is tied below the points of origin of the renal arteries, albumen appears in the urine," and that this is an "example of porous diffusion or filtration."

These three cases present, in common, five phenomena: dropsical effusion, emaciation, marked anæmia, albuminuria, and lessened density of the urine, which point directly to disease of the kidneys. But was the renal affection primary or secondary? The determination of this question involves, mainly, the consideration of the cause. In cases II. and III. it is manifest that the malarial cachexia was primary, and, though not absolutely demonstrated in the case of amyloid degeneration, it is fairly inferred from the history of the patient. There is nothing new in this sequence of disorders. Parkes affirms, from personal experience, "that chronic Bright's disease is a consequence of ague." Niemeyer says the

"poison of malaria" may cause Bright's disease. H. C. Wood, in a recent essay, published in this Journal, enumerates malaria among the causes of albuminuria. Johnson maintains that the poison of fevers is eliminated through the kidneys; and, though not distinctly classing malaria among the causes, dwells, with great pertinacity, upon the causal relation of dyscrasiæ generally to Bright's disease. Stewart enumerates ague among the causes. Dr. Woodward, of the army, in his work on camp diseases, at page 185, in discussing "chronic malarial poisoning," says: "Disorder of the kidneys frequently complicates the condition under consideration. Scanty, more or less albuminous, urine is often observed, and these cases which occasionally perish with the symptoms of acute uræmic toxæmia, not unfrequently terminate in chronic Bright's disease, with confirmed albuminuria, œdema, or general anasarca, and the whole train of symptoms of that disorder." It is an accepted doctrine that any toxæmic condition of the blood, wherein the poisonous agent may be eliminated through the renal secretion, may produce some one of the forms of Bright's disease. This is demonstrated in cholera, scarlatina, rheumatism, erysipelas, measles, diphtheria, typhoid fever, pyæmia, syphilis, gout, and in exhaustive suppurative and carious affections. In all the dyscrasiæ the kidney complication is secondary, and, perhaps, no one of the cachexiæ is more marked in its pathognomonic characteristics or more fruitful in sequences than the malarial, none more destructive of the healthy constitution and nutritive qualities of the blood, and none more enervating. Besides the general phenomena, which so manifestly distinguish the malarial cachexy, and which so markedly exhibit the effects of deficient hæmatosis, there are certain direct and immediate alterations produced in the character of the urinary secretion. Parkes has shown that the moment a paroxysm of malarial fever begins, the excretion of urea increases, such increase continuing during the algid and hot stage, diminishing during the sweating, and falling below the healthy standard during the intermittence; also that the uric acid is greatly increased during the fit. Ringer asserts that the quantity of urea corresponds to the degree of temperature; also that the chloride of sodium is greatly increased during the hot and cold stages, and that albumen is found, in a limited proportion of cases, during the fit, with blood and renal cylinders. McClean says: "the blood is changed from the beginning of the attack, and, probably, for some time. The red globules and fibrin are diminished. The coagulum is larger and more flabby than that of healthy blood, much darker in colour." Aitken insists that "an altered, defective, or contaminated state of the blood is the source of the morbid phenomena which follow." Among the numerous causes of desquamative nephritis there is none more frequent than cold. Cold cannot act by lessening the temperature of the kidneys. The renal affection is secondary to the arrest of the cutaneous transudation and the determination of the blood to the internal organs. In the algid stage

of intermittent fevers these conditions are superadded to the blood infections, and not only is augmented duty imposed upon the kidneys, because of the arrest of the functions of the skin, but their functions are impaired by the obstructive hyperæmia, resulting from the interruption of the cutaneous circulation.

Rokitansky, Walshe, Watson, Johnson, Aitken, and many others maintain that the various forms of Bright's disease find their cause in the quality of the blood sent to the kidneys, and that the materies morbi seeks its discharge through the secretory function of the kidneys.

No age is exempt from nephritis. Rayer observed many cases from six months to one year. Noel reports a case eighteen months old; and Grisolle, one a few weeks old.

The treatment in all the cases was nearly the same, and was adapted, especially, to the constitutional symptoms. In cases II. and III., quinia was given as an antiperiodic, to arrest the intermittent fever. In all, the combinations of quinia and iron were given. In the case of amyloid degeneration, the diet was highly nutritious; in the others less so. The treatment was based upon the theory of the secondary character of the renal affection, and the result, I think, sustains this view.

In conclusion, I must acknowledge the valuable assistance of my colleague, Dr. W. W. Johnston, to whom I am indebted for the numerous microscopic examinations; and to Dr. Ralph Bell, House Physician, for the notes of the cases.

ART. XV.—*Remarkable Case of Disarticulation of Inferior Cornu of Thyroid Cartilage.* By EDGAR HOLDEN, M. D., of Newark, N. J.

THE following case will perhaps be of interest from its exceeding rarity; similar displacements hitherto recorded, being usually due to fracture:—

John C., æt. 52, a robust, active man, received a severe blow or kick on the throat while partially intoxicated. Being engaged in a drunken brawl, and so far under the influence of liquor as not to remember the cause of the melée, he was uncertain how the injury was inflicted, but thinks it was by a kick. Remembered suffering acute pain, with sense of suffocation, and of raising a considerable quantity of blood. After return to consciousness he continued to raise blood, and to have paroxysms of intense pain, with dyspnœa, and difficult deglutition. Aphonia was complete.

A cough, harassing in character, and after a few days accompanied by expectoration of a glairy mucus, followed; and as party considered himself suffering from a severe cold, he was subjected to treatment by expectorants, etc., naturally without relief.

March 7, 1872. A laryngoscopic examination revealed what at first seemed a contraction of the right ary-epiglottic fold with depression of the

corresponding side of the epiglottis, considerable hyperæmia of the posterior wall of the larynx, ventricular bands, and vocal cords. This was now twenty-five days after the injury.

Subjective condition, as follows: Aphonia not absolute, but great; dysphagia and considerable cough with expectoration of muco-purulent character, and occasionally slight dyspnœa, otherwise in good condition.

10*th*. On careful examination with a powerful illumination, the epiglottis was found in a normal position and horizontal, while the arytenoid cartilage of the right side was drawn upward and inward, the vocal cord coming but slowly up to the median line during phonation, and both falling helplessly back against the laryngeal wall immediately after the effort. *Almost complete anæsthesia of the larynx existed.* Touching even of the cords themselves produced none of the usual signs of sensitiveness so characteristic of the larynx, and a solution of iodine of a strength of twenty grains to the ounce (in glycerine) produced only a slight inclination to swallow.

Upon each examination a full view of the trachea could be had down to its bifurcation, while just behind the arytenoid cartilage there presented an apparent redundancy of the anterior œsophageal wall bathed in a thick purulent discharge. This was produced by a contraction of the right arytenoideus muscle deprived of its "point d'appui," and was undoubtedly the cause of the dysphagia.

This case is dwelt upon thus minutely, inasmuch as it is believed to be extremely rare, and because, to any one familiar with affections of the throat, the question of correctness of diagnosis will at once arise.

There was no evidence whatever of fracture. External manipulation would at first lead to a belief that the cartilages were in their normal position; but the patient called attention to a point that "stuck out," and was painful under pressure in certain positions of the head, and this point was easily ascertained to be the lower cornu of the thyroid detached from its articulating facet.

The cricoid could, moreover, when the head was thrown back, be felt to recede on the affected side upward and between the alæ of the larger cartilage. The articulation of the lower cornu on the opposite side was intact, the hyoid articulations were also sound, there was no fracture either of the thyroid or cricoid, and no disarticulation of the alæ of the former in the mesian line such as has occurred from injuries, and, so far as a thorough examination could ascertain, there were no evidences of any other injury to the cartilages than the one disarticulation of the right lower cornu of the thyroid.

Farther than this, and in corroboration of the diagnosis, the voice manifestly improved when the head was bent forcibly over toward the sound side, and the tension of the tracheal attachments approximated a normal position.

The dislocation permitted a bulging, so to speak, of the transverse fibres of the posterior laryngeal muscles, thus producing dysphagia simply as foreign bodies protruding into the œsophagus; having also probably

been lacerated by the injury, and kept in a state of irritation by the necessities of eating and drinking, the purulent discharge followed.

The cough is not so readily explained, since the larynx, probably by reason of injury to the external laryngeal branch of superior laryngeal nerve, had lost its sensitiveness. The aphonia, of course, would naturally result from incomplete tension of the right true cord.

All effort at reduction proved unavailing, anæsthesia and subcutaneous section of the crico-thyroid muscle seemed to offer the best prospect in the case, but, the operation being unfortunately postponed a day or two, owing to other engagements, the patient left the city.

ART. XVI.—*Notes of a Case of Opium Poisoning.* By J. S. TODD, M.D., of West Point, Georgia.

J. H., æt. 30; dissipated, took, October 26, 1872, at 7 P.M., in my presence, little over six drachms of tinct. opii. Assuming thirty drops of laudanum to be equal to a grain of crude opium, he took at one dose twenty-four grains. He had taken half an ounce of laudanum ten or fifteen minutes before this (16 grs.), thus taking in all 40 grs. opii, or 1200 drops of the tincture.

All persuasion to induce him to take an emetic being futile, I prevailed on several by-standers to throw him down, and then vainly attempted to give him a mixture of ipecac. and sulphate of zinc, āā gr. xxx. I could not make him swallow, though his nose was held and threats used, until I poured some of the solution in his eyes, which caused so much pain that he came to terms, and took the emetic a few moments after; it not having the slightest effect, a drachm more of ipecac. was administered. In ten minutes he was asleep. I had him walked and shaken, thinking that the emetic would act could he be kept awake. There was no stomach pump in the place. He soon ceased to step or exhibit any symptom of pain or sensibility whatever. Placed his head under a pump and gave him the cold douche for five minutes. Meanwhile the coma gradually and fearfully increased. Had him carried to Dr. McMillan's office, where there was a galvanic battery. I was here joined and assisted by Dr. Henderson. Under the galvanic stimulus he so far regained consciousness that Dr. McMillan and myself concluded to give him more ipecac. This was at 8 o'clock. Suddenly, while taking it, he collapsed, and some of the fluid passed down the trachea. Respiration was kept up partly by artificial means, but principally by placing one pole of the battery along the course of the pneumogastric nerve, above the sternum, and the other at the pit of the stomach, for at least three-quarters of an hour. At this juncture the glass of the battery containing the acid broke, and we had no substitute. Mustard was applied to the spine, chest, and abdomen, and friction used on extremities. Pulse slow, full, 30; respiration stertorous, 8; face much congested; nose and ears purple; extremities cold. Had him moved to his room, sent for an old-fashioned friction magnetic battery, the only one in the town. The pupils were, of course, tightly

contracted. We concluded to try the hypodermic injection of atropia; it was administered until the pupils were widely dilated. At 11 P.M. Drs. McM. and H. left me, saying the man would die very soon; such was also my opinion, but I determined to give him every attention. The battery was used on him, with occasional intermissions, until three o'clock, when his breathing was six, and the pulse suddenly ceased. I immediately injected under the skin a drachm of raw whiskey, and felt the pulse return before the syringe was withdrawn. After his pupils were dilated by the atropia his pulse became rapid and weak. Fifteen minutes later I injected another drachm of whiskey and two drops of tincture of veratrum viride. Five minutes after the dose, his pulse became slower, but weaker, and there was paralysis of the entire right lung. No air whatever entered or was expelled from it for two or three respirations. I now had him violently rolled about the bed, slapping and compressing the chest. Five or six such turns caused a groan and an emesis of four or five ounces. He opened his eyes, but immediately closed them and relapsed into the comatose condition. This was at 3.15 A.M. From that time until five I gave him six hypodermic injections of a drachm each of whiskey; and two, an hour apart, of two drops each, of tinct. verat. viride, with marked improvement each time. He was meanwhile persistently and continually worried, the battery applied to spine, the cold douche was used, and he was walked, slapped, whipped, tickled, etc. Any such procedure, however, after two or three repetitions, lost all effect. By 5 A.M. he was able to swallow a teaspoonful of very strong coffee; one cup of grounds to three of water. By 8 he had taken four or five of such cups, and vomited freely. After this he vomited several times, but at 9 he retained a tolerably stiff drink. Once, about half past six, I let him take a nap. Whenever he was not worried, he slept; and would, while sleeping, have general convulsive movements, and the breathing would fall from fourteen to eight per minute. I did not allow him to lie down at all during the day, although he was pretty thoroughly aroused by 10 A.M., and perfectly rational. I permitted him to take naps of from ten to thirty minutes, sitting. He vomited everything he took that day, except the toddy before mentioned.

Oct. 28. Slept tolerably well last night, but was very nervous.

Nov. 1. Has suffered considerably from nervousness and irritability of the stomach during the past three days. Gave laudanum, bromide of potassium and quinia, pro re nata.

On October 29th he left for his home, and November 2d he resumed his work. The whiskey did not cause a single abscess; all soreness about the chest, where the injections were made, was superficial, and plainly attributed to the mustard which blistered in several places over the thorax, and the skin is still highly inflamed wherever it was applied. He has complained always of his throat, describes the sensation as brassy, and was, until to-day, hoarse. This is doubtless caused by the atropia. His bowels moved spontaneously on the day after he took the laudanum.

12*th*. Been at work steadily since 2d, no abscess has developed itself.

Remarks.—The atropia in this case did no good; the veratrum much: in fact to it do I mainly attribute the recovery. I do not believe, however, that without the electricity it would have been adequate to the cure. If opium and whiskey are an antidote to veratrum, *and they are*, why should not the latter be an antidote to the former?

TRANSACTIONS OF SOCIETIES.

ART. XVII.—*Summary of the Transactions of the College of Physicians of Philadelphia.*

1872. *Feb.* 21. *Excision of the Knee.*—Dr. JOHN ASHHURST, Jr., exhibited a patient on whom he had performed an excision of the knee at the Episcopal Hospital nearly a year previously. The patient was a girl of eleven years, who at the age of five had suffered from smallpox, following which she had arthritis of both elbows, and of the right knee-joint. In the elbows, the disease terminated in firm anchylosis, and, the joints being flexed at convenient angles, she enjoyed very good use of her upper limbs. In the knee, however, the arthritis recurred from time to time, the last acute attack having been about two months before the date of the patient's entrance to the Hospital, and the appearance of the joint when she was admitted being very characteristic of advanced disease of the articulation. The knee was flexed to a right angle and very much swollen, the subcutaneous veins enlarged, and the tibia dislocated backwards and outwards. The joint was tender on pressure and painful when moved, and the patient thin and anæmic. Excision was performed on Feb. 28, 1871, by means of a single transverse incision, the condyles of the femur, articulating surface of the tibia, and patella being removed. Five or six small vessels were secured with ligatures, and the wound closed with wire sutures and lightly dressed with oiled lint, while the whole limb was firmly fixed upon a bracketed posterior splint, which was not changed until some time in the fourth week. Convalescence was retarded by a profuse epistaxis which occurred a few days after the operation, leaving the patient blanched and exhausted, by rather profuse suppuration (several abcesses having formed above the site of excision), and by a troublesome diarrhœa which beginning in the month of April continued at intervals through the summer and at one time became a

Fig. 1. Fig 2.

really serious complication. Firm bony union was completed about the third or fourth month, but several superficial sinuses persisted and did not entirely heal until three or four weeks ago. The patient now (Feb. 1872) walks readily, without any assistance whatever, though of course with a perceptible limp, due to the shortening which is found by measurement to be an inch and three-quarters. She has grown considerably since the operation, and is now fat and hearty, and in her present condition offers a very satisfactory evidence of the great advantages to be derived from this branch of conservative surgery.

Photographs were exhibited, showing the appearance of the patient before the operation and at the present time. (See figs. 1 and 2.)

April 17. *Lacerations produced by a Lion; Death in forty-eight hours from Traumatic Gangrene.*—Dr. JOHN ASHHURST, Jr., reported the following case: J. W., aged 25, a professional lion-tamer, engaged with a menagerie now exhibiting in the outskirts of the city, was rehearsing his part on the afternoon of Tuesday, April 2, 1872, and had placed his head in the lion's mouth, when the animal unexpectedly closed his jaws; the by-standers rushed to the rescue, and with clubs and iron bars, forced the wild beast to loose his hold, when, had his victim made his escape, he would have got off with moderately severe lacerations of the face; unhappily, however, either falling in the cage, or, as other accounts have represented, voluntarily returning with a mad determination to obtain the mastery, the unfortunate man again came within the lion's grasp, was quickly struck down, and the monster's jaws again closed, this time upon the fleshy part of the victim's right thigh. Again the wild beast was driven off, and his conquered conqueror was dragged from the cage, bleeding profusely, and seeming more dead than alive. This was about four o'clock in the afternoon, and the wounded man was taken to a neighbouring tavern, from which he was brought, a little before midnight, to the Episcopal Hospital. When admitted, the patient was in a state of profound shock; there were several lacerations about the lower part of the face and chin, the largest wound having laid open the right cheek into the mouth, while on either side of the right thigh were numerous irregular and jagged openings,[1] varying in length from a few lines to two inches, or even more; these wounds appeared to be of great depth, the muscles of the limb having been evidently torn up and mangled in a frightful manner, though the bone, and, as far as could be ascertained, the femoral artery, seemed to have escaped injury.

I did not see the patient until about 2 P.M., April 3, when I found him in a manifestly hopeless condition. His pulse was extremely feeble and running at the rate of 172 beats to the minute, his respirations being about 40 in the minute, while his injured thigh was enormously swollen, emphysematous and crackling from the gaseous products of decomposition, and discharging profusely from its various wounds a bloody, sanious, and very offensive fluid; it was, in fact, in that condition, known to surgical writers as true "traumatic, or spreading gangrene." This condition had come on during the night (as I am informed by Dr. Simes, the house-surgeon), and, therefore, in less than eighteen hours from the time of the patient's injury.

I saw the patient again the next day, when he was evidently mori-

[1] These had been *carefully sewed up* by a Homœopathic practitioner who attended the patient before his admission to the hospital.

bund; there was no pulse at the right wrist, and that on the left was barely perceptible; the right leg, below the knee, was now white, cold, and corpselike, while the thigh was swollen almost to bursting, black in parts, with the muscles protruding through the wounds, and exhaling a most offensive smell; the discoloration of impending gangrene had already reached the buttock. While thus fully a quarter of the patient's body was literally dead and decomposing, his consciousness was perfect, and his mind clear, when he was spoken to, though he occasionally wandered off in delirium when left to himself. He complained of almost no pain, only a little, he said, about the feet. He died two hours afterwards, just forty-eight hours from the time of his injury. No autopsy could be obtained.

This case is of interest, both on account of the unusual character of the injury (in this country at least), and on account of the early onset, and rapidly fatal course of the terrible form of gangrene by which it terminated. The only hope of recovery (and that, of course, a slight hope) for this unfortunate man, would have been found in immediate amputation, at or near the hip-joint; when the patient first came under my observation, his general condition was such as to forbid a resort to any operation whatever.

In answer to questions which had been asked, Dr. Ashhurst said that he did not see any evidences of septic poisoning; he thought it quite probable that the patient was the subject of visceral disease, although this could not be determined, as no autopsy was permitted.

Case of complete Prolapsus of the Rectum in a Patient previously treated for Exstrophy of the Bladder.—Dr. JOHN ASHHURST, Jr., reported a case of prolapsus of the rectum, treated by the application of fuming nitric acid. The patient was a child on whom Dr. Ashhurst had operated more than a year ago, at the Children's Hospital, for extroversion of the bladder (see number of this Journal for July, 1871, p. 70), and the rectal prolapse, which was complete (all the coats of the gut being invaginated, and protruding to the extent of about four inches), had existed since she was six months old. Instead of applying the acid in the way ordinarily recommended, through a fenestrated speculum, Dr. A. had followed the plan lately advised by Mr. Allingham, by painting the whole circumference of the protruded bowel in a broad band, sparing, however, the half-inch next to the anus. Before applying the acid, the gut was thoroughly washed and dried, and subsequently well-oiled and returned within the sphincter; the rectum was then plugged with charpie (as a substitute for the cotton-wool recommended by Allingham), and a firm compress applied to the anus, and held in place with broad adhesive strips and a bandage. The patient was, of course, anæsthetized before the operation, and opium was freely given afterwards to relieve the inevitable tenesmus, a cathartic being administered on the fourth day.

It was intended to strictly follow Mr. Allingham's directions, by allowing the rectal plug to remain in place four days, but in spite of all the precautions that had been taken, the rectum relieved itself of its contents the night after the operation, the gut, however, not protruding, and no re-descent occurring for twenty-three days. A second application made a few weeks later by Dr. Valdivieso, the house-surgeon, was more successful, for, though the patient on this occasion tore off her dressings the night after the operation, there has been, as yet, no re-descent of the

bowel, though nearly three months have since elapsed; the patient has now normal daily stools, without pain and without any tendency to prolapsus, a state of affairs which has not existed before, since she was six months old.

It may be added that the result of the plastic operation performed to cover in the extroverted bladder, continues to be satisfactory. The inverted skin has assumed the feel of mucous membrane, and a pouch is formed in which the urine accumulates, so that, in the recumbent posture, the patient can hold her water for about two hours, and, when walking or sitting, for about half as long.

This patient has since gone home, perfectly well.

Sept. 3 *Specimens of Tænia Nana.*—Dr. E. A. SPOONER presented these entozoa which, he observed, answer perfectly the descriptions of Bilharz and Leuckart, showing a large, obtuse, quadrangular head, long narrow neck, becoming broader in the body, until, at the terminus, it is three times the width of the head. The entire strobila is 8 to 10 lines in length, having from 150 to 170 segments.

These tænia were passed by a young man, who has presented symptoms of general debility, occasional colicky attacks, diarrhœa, severe frontal headache, disturbance of vision, with slight febrile exacerbations occurring at irregular intervals during the past two weeks. It has been impossible to discover larvæ in the excretions, and it is to be hoped that the cephalalgia and disturbance of vision are symptomatic only of the intestinal derangement. Up to the present time no marked emaciation has occurred, the appetite is less fitful, and the vision is more perfect, but the pain in the head has not much abated.

Oct. 16. *Case of Placenta Prævia.*—Dr. WALTER F. ATLEE related the following: Mrs. P——, whom I had twice attended in confinements several years ago, came to this city from New Orleans, about two months since, when she supposed herself to be about seven months gone in her third pregnancy, to be confined here. She observed nothing remarkable in her state, except an unusual sensation of weight in the lower part of the abdomen.

About one month after her arrival, after having made a great effort in raising something, she experienced a gush of blood from the vagina. On examination, I found reason to believe that the placenta was near the mouth of the womb. After rest for some days in the horizontal position this discharge ceased.

A week ago I was aroused at night by a call that she was dying from a sudden hemorrhage, and, on reaching her house, some few squares distant, I found her almost lifeless from loss of blood. I gave at once a teaspoonful of the fluid extract of ergot, and, passing a uterine sound through the mouth of the womb, which was slightly open, I made a hole through what was over the mouth of the womb, and, very firm pressure being kept up externally against the belly, emptied the womb of its fluid contents. The pressure of the child's head at once stopped the profuse bleeding.

The mouth of the womb was gradually dilated, the whole hand being in the vagina; the placenta was removed, and after that the child was delivered head foremost. The child, of course, was lifeless. It appeared to be at full term. The mother is now out of danger—at least all danger from the hemorrhage.

REVIEWS.

ART. XVIII.—*General and Differential Diagnosis of Ovarian Tumours, with special reference to the Operation of Ovariotomy; and occasional Pathological and Therapeutical Considerations.* By WASHINGTON L. ATLEE, M.D. With thirty-nine illustrations. 8vo. pp. 482. Philadelphia: J. B. Lippincott & Co., 1873.

Ovarian Tumours; their Pathology, Diagnosis, and Treatment, especially by Ovariotomy. By E. RANDOLPH PEASLEE, M.D., LL.D., Professor of Gynæcology in the Medical Department of Dartmouth College; Attending Surgeon of the New York State Woman's Hospital; President of the New York Academy of Medicine, etc. etc. With fifty-six illustrations on wood. 8vo. pp. xxvii., 551. New York: D. Appleton & Co., 1872.

WE welcome the appearance of these volumes with no ordinary feelings of pride and gratification. They may be looked upon as chronicles of the completion of one of the grand modern triumphs of our art. Within the time during which men now living have been on the scene of action, ovariotomy has established itself. It has overcome the opposition of many high in authority, and won its way in spite of the most positive denunciation; from the leaders of professional opinion it slowly gained first the damnation of faint praise, and then a qualified assent and recognition, but it has finally attained the firm position of an unquestioned place among the legitimate operations of surgery, yielding results equal, if not superior, to any of the capital operations, and already numbering its rescued sufferers by hundreds. It is not altogether because they are valuable contributions to science that we give the works a hearty welcome, but also as contributions to the medical literature of our country. Although the birth-place of ovariotomy, although we have always had skilful and cautious operators, and persevering students of the subject, and although our journals and volumes of transactions have contained able papers and contributions, this country has not heretofore had a representation in literature commensurate with the aid it has rendered in making this great progress, nothing to adequately represent to the world at large the work we have done or the skill and talent that have here been devoted to the subject.

The title-pages show at once that the aim and scope of these works are different. Dr. Peaslee gives a complete treatise upon the subject; Dr. Atlee considers chiefly the subject of diagnosis, preparatory to the publication of other volumes. In the former, therefore, we find chapters upon the anatomy of the ovaries, the pathology and classification of ovarian tumours, the treatment of such tumours otherwise than by ovariotomy, and the second part is devoted to the operation itself. The latter has but two chapters not devoted to diagnosis; one upon the pathology of cystic tumours of the ovary, the other upon the physical, chemical, and microscopic characteristics of dropsical fluids. Neither of

these chapters is the work of Dr. Atlee. The first is by Dr. J. Ewing Mears, the second by Dr. Thomas M. Drysdale, both of Philadelphia. The subject of diagnosis, therefore, occupies nearly the whole of one book, and of the other only about one hundred pages. Dr. Atlee's work is based entirely upon personal experience; he presents it as a "mere transcript, of what he has seen and done in this field since 1843," and it contains the record of one hundred and thirty-seven cases, illustrative of the various points of diagnosis. While Dr. Peaslee has not had an experience in operating which can be compared with Dr. Atlee, he has had enough for a thorough practical acquaintance with the subject, and has made a most careful and exhaustive study of it, which is apparent in every chapter and upon every page. He seems to have laid under contribution every volume and every journal-paper published in the three great languages, and shows a scholarship which is not only creditable to himself, but which reflects credit upon the profession of this country. On the other hand, Dr. Atlee, in his preface, makes a distinct disclaimer as to drawing from any resources save his own, or availing himself of the labours of others. While this adds to the value of the book in some respects, on the other hand, in many respects it detracts from it, and in several important portions of it we found reasons to regret that the author has so rigidly followed this determination; several instances of this will be observed in the course of this article.

Diverse, however, as the works may be in aim, scope, and manner of execution, we are happy to say that they have in common many most excellent features. Both are independent in tone; the foundation of clinical experience and thorough study is especially seen where so much pioneer work is done. Both are candid, and errors of diagnosis are frequently admitted. "Mistakes," Dr. Atlee well says, "teach most valuable lessons, and, when discovered, are not likely to be repeated." These with some other characteristics, place these works among the "books which are books," among those which the practitioner turns to when he feels the want of a judicious and reliable guide. And, indeed, we could scarcely expect less from the authors; the high position they both occupy, the immense and the well-known devotion of the other to the subject for many years, experience of the one, their character and learning, all eminently fit them for the task they have undertaken, and warrant the expectation of a satisfactory performance of it.

The diagnosis of ovarian tumours preponderating in these volumes to the extent shown, we naturally turn first to some consideration of that subject. A proper appreciation of its difficulties, and the need which has been heretofore felt for more accurate knowledge, should of course precede a perusal of these works. The difficulties, it is safe to say, cannot be exaggerated. Strong as this expression may appear, it can be sustained from the writings of every author upon the subject, and those who have had the greatest experience have expressed most strongly their conviction of its truth. Says one of our most distinguished ovariotomists: "I do not think that a perfectly satisfactory differential diagnosis of an abdominal tumour can ever be made during life, save by section, no matter how skilful in such questions the attendant." Says another: "In some instances it is not only difficult, but *utterly impossible*, even for the most capable and accomplished diagnostician, to arrive at a certain conclusion." There has scarcely been an operator, perhaps but one, who has not commenced the operation and found matters widely different from what

be expected. More than a hundred cases are on record in which the abdomen has been opened with the object of removing an ovarian tumour, but the operator discovered after making the incision, that the tumour was not ovarian, but uterine."[1]

The need, then, of better and more accurate diagnosis is clear. The practical bearing of improvement in this part of the subject is equally apparent. So long as grave mistakes are made, and so long as it is understood that they cannot be avoided even by the most skilful and most experienced, so long will many members of the profession hesitate to advise their patients to submit to it, and thus the operation will be restricted in the amount of benefit it might confer. On the contrary, certainty of diagnosis leads to increased confidence in and recourse to the operation, and thus to the extension of its benefits. In every respect, therefore, in regard to the credit of the profession, the reputation of the individual practitioner, the welfare of the community, and the safety of the patient, the importance of an improved diagnosis of abdominal tumours cannot easily be overestimated.

Comparing the manner of treating of the subject of diagnosis, or rather of differential diagnosis, we find, of course, that the works differ, each author following a plan of his own. Dr. Atlee, after an introductory chapter upon the mode of examination and diagnosis in general, enters at once into the subject, devoting a chapter to each form of disease likely to be mistaken for an ovarian tumour, and then details numerous illustrative cases with remarks interspersed. His work is better adapted to the wants of the practitioner who has already some experience; still we think it too much encumbered with details of cases, such details being very little read, we believe, beyond the few sufficient to illustrate the point in hand. For the use of the student we should give the preference to Dr. Peaslee's work, not only from its completeness, but from its more methodical arrangement. So far as the interests of the student are concerned, however, we feel compelled to say that both authors have made a mistake in giving obscure causes and complications before presenting the subject in the simplest phases. Thus, among the first cases of Dr. Atlee's book are cases of ascites closely resembling ovarian dropsy —the exudation of peritoneal inflammation having glued down the intestines and limited the fluid to a restricted portion of the abdomen. Such cases are rare, very obscure, and likely to puzzle even an expert. Dr. Peaslee, too, places a chapter upon complications with ovarian cysts and on other cysts often mistaken for them before the one upon differential diagnosis. We think the method of investigation proposed by the latter author, for making a diagnosis, an admirable one for the beginner to follow. He proposes a series of questions, each of which is to be clearly answered before advancing to the next.

"I. Is there actually any enlargement within the abnormal cavity?

"II. Is there fluctuation, indicating an accumulation of fluid within the abdomen; or a solid tumour?

"III. Is the fluctuation due to ascites?

"IV. Does the cause of the enlargement arise in the pelvis?

"V. Is not the tumour a pregnant uterus?"

These and other questions are entered upon in detail, and the various directions in which the examiner may be led astray carefully pointed out. In regard to the consideration of question II., we have one remark to

[1] Spencer Wells—Dublin Journal of Med. Sci., January, 1872, p. 43.

make. After stating that non-detection of fluctuation must not always be accepted as proof of solidity of a tumour, the author gives the circumstances under which an observer may be mistaken, and among them distinctly recognizes "great tenseness of the cyst, even though it be a large one." Now, if we understand Case XI., p. 52, of Dr. Atlee's work, it is given to ridicule the idea that an abdomen may be "too tight to fluctuate." Nor does this author anywhere admit that such a condition may deceive in this respect. We most assuredly have this condition of things in hydrocele—a cyst filled with fluid and "too tight to fluctuate."

There is one doctrine of Dr. Atlee's work which is most valuable and important; it may be called the leading doctrine of the book, since he repeatedly impresses it, emphasizes its reliability, and gives numerous instances of its successful application. This doctrine is—the value of an examination of the fluids of dropsies, and especially of abdominal dropsy, for diagnostic purposes. This is the general doctrine having a general application to abdominal dropsy and cystic tumours. In addition to this, or rather as a part of it, he teaches a particular doctrine in regard to the diagnosis of ovarian cysts equally as interesting and as important. It is, that the fluid of ovarian cysts may be distinguished from all other fluids by microscopic examination; that a peculiar cell is found in such fluid which he calls the "ovarian granular cell," and which is characteristic of the fluid of ovarian cysts, being found only in them. The reliance placed upon this sign by the author is complete, and we might quote many instances and cases. The greater number are cases in which the microscopical characters of the fluid sustained and supplemented the other signs and symptoms, but the value of this discovery is best shown, of course, in doubtful cases, where some of the symptoms and signs not only did not harmonize, but were actually opposed to the diagnosis of an ovarian cyst. Such cases are given, of which we may refer to numbers XXV. and XXVI. as instances. In Case XXVIII. it seems to have been the means of deciding a case to be cystic disease which had been diagnosticated cancerous tumour of the ovary by a very eminent gynæcologist. Case XLIII. also seems to be a good instance of a *negative* diagnosis made by this sign alone; the peculiar cells not being present, the tumour was decided not to be ovarian.

The frequency with which this pathognomonic cell is found may be judged from the statement of Dr. Atlee, that it was seen in thirty-one out of thirty-four specimens, and from what Dr. Drysdale says in the chapter on the dropsical fluids of the abdomen. After enumerating the various cells found in the fluids of ovarian cysts, as oil globules, epithelial cells, blood-corpuscles, and the inflammatory globules of Gluge, he says:—

"*But, no matter what other cells may be present or absent, the cell which is almost invariably found in these fluids is the granular cell.*" (p. 458.)

"This ovarian granular cell I consider as diagnostic of ovarian dropsy, and have seldom failed to find it in this fluid, except in some of the earlier cases, where it probably existed, but was overlooked from inexperience in the examination of these specimens." (p. 460.)

This cell is carefully described on p. 458: Round, delicate, containing a number of granules, varying in size from one-five-thousandth to one-two-thousandth of an inch in diameter, but generally about the size of a pus cell. On p. 460 we have the means of distinguishing it from a pus cell, and also from the "granule cell of Paget" and the inflammatory

corpuscle of Gluge. The behaviour of the cell upon the addition of acetic acid furnishes the first, and the action of ether the latter. In addition to the description and the action of reagents a representation is given of the various cells mentioned to make evident to the eye the difference between them. Now, we cannot call in question what a man sees, we cannot doubt the action of reagents, but a representation made for the eye is certainly open to criticism, and we are compelled to say that if such differences exist, as are stated in the text, between the ovarian cell and some other cells, the artist has not been happy in representing them in the cut on p. 459 and given also by Dr. Atlee on p. 59. Their size is very uniform, instead of varying as stated in the description, and the difference in appearance from a pus cell after the addition of the acid is so slight that only an expert could distinguish it.

This subject is one of those in regard to which we regret that Dr. Atlee has failed to state clearly and succinctly what has been done by others. No distinct claim is made by him, or by Dr. Drysdale, that they are the discoverers of this cell, yet enough is said to convey doubts upon the point, and to lead the reader to infer that others have had something to do with the matter. Thus, on pp. 60, 61 there is a "personal explanation" in regard to a prize essay of the American Medical Association in 1853, by Dr. Waldo J. Burnett, of Boston, in which the matter is certainly not made clear, and, on p. 154, speaking of the indispensable value of the microscopic examination of fluids, Dr. A. says:—

"It recalls to mind a statement made to me some years ago by Dr. Waldo J. Burnett, the author of the prize essay on 'The Cell,' *that he could distinguish ovarian fluid from every other by the character of the cell.*"

We, of course, turned to Dr. Peaslee's work with no little interest to find what he has to say on so important a point. Fortunately we can give entire not only the description of the object, but his estimate of the diagnostic value of the cells, as both are comprised in a few lines, and from the words we italicize may be gathered his opinion as to the frequency of their occurrence:—

"But a still more striking characteristic *when met with*, of the fluid of ovarian cystomata, is the ovarian glomerulus, or "gorged granule" spoken of by Mr. Nunn, though he does not attach much diagnostic importance to it, and which is recognized by Kœberlé and Dr. W. L. Atlee, and described as found in some of the ovarian cysts recently removed by the latter." [A note of reference to the reports says "they are called *granular corpuscles.*"]

"These glomeruli are of a brownish-yellow colour, composed of granules, and are one eight-thousandth to one seven-hundredth of an inch in diameter. I have not been able to detect them in the fluid of all cysts known to be ovarian; and further observation is necessary in order to determine their precise diagnostic value. Kœberlé figured them in his monograph in 1865. Spiegelberg and Waldeyer make no mention of them. Prof. Vallette, of Lyons, terms them *corpuscules inflammatoires.*"

Nothing is said here of the effects of reagents, but here we have again a representation addressed to the eye, and here again we are compelled to confess ourselves unsettled by this, usually the best, means of giving a correct idea of an unknown object. In this cut the difference in size between the ovarian corpuscle and the pus cell is marked, the former being very much larger, while in that of Dr. Atlee's work they are very nearly equal. Here, too, the ovarian corpuscle is of varying size according to the description, while in Dr. Atlee's work they are all of very nearly the same diameter. Nor is this all; let any one compare the

representations of the two books and see if he can distinguish the "ovarian corpuscle" of Dr. Peaslee from the "inflammatory corpuscle of Gluge" of Dr. Atlee. Without reading the text the "A" of fig. 33 of the former would certainly be taken for the same object as the "I" of fig. 37 of the latter. Now, one of two things is certain, either the two authors are not writing of and describing the same thing, or they have failed to correctly represent what they are writing of.

We trust that we shall not be understood as questioning the statements of Dr. Atlee or Dr. Drysdale, upon a subject, too, to which the latter has bestowed an amount of labour deserving very high praise. We throw no doubts upon the existence of the peculiar cell, nor do we pretend to decide upon its diagnostic value, either of which would be unjust and presumptuous. We simply place upon record, for the benefit of those into whose hands the books may not fall, the diverse statements of the two authors upon the subject. The doctrines as to the existence of this cell and its diagnostic value must pass through that crucible to which all new doctrines in science are submitted, the scrutiny and re-examination of other observers. If they shall pass through successfully, and the observations of Drs. Atlee and Drysdale be confirmed, it will be difficult to overestimate the importance and the value of the discovery, or the honour due to those who have patiently worked out this addition to our knowledge. Even if the ovarian cell so nearly resembles other cells that their detection is beyond the powers of the ordinary observer, requiring the trained eye of the expert microscopist, the discovery will still confer no small amount of benefit upon humanity.

We will now examine somewhat in detail two forms of disease which very closely resemble ovarian tumours, to illustrate the subject of diagnosis by examination of the fluids, as well as to show some of the recent advances in this direction. The first is the serous cyst of the broad ligament. No other pathological condition more nearly resembles ovarian dropsy than this; no other is more difficult to distinguish. Dr. Peaslee says: "Before tapping it is almost invariably taken for the ovarian cyst." Dr. Atlee says: "It may safely be asserted that its external appearances, when the disease is fully developed, are identical with those of unilocular ovarian dropsy at a similar stage of development." While there are some minor points, such as age, and facial expression of the patient, and rate of growth of the tumour, which might excite suspicion in the mind of an expert, the differential diagnosis now rests safely on the character of the fluid. These cysts contain "a bluish-tinged serous fluid, clear and transparent as spring water, and possessing high refractive powers, as manifested by its magnifying any small object seen through it, if lying at the bottom of the vessel which has received it. It has a specific gravity of only 1004 to 1005, and contains albuminate of soda, but no free albumen." (Peaslee.) "The fluid, in colour, transparency, and consistency, is like spring water. It may be slightly opalescent, but this does not affect its transparency. It is so perfectly clear that the bottom of a bucket when filled with it may not only be seen, but the fibres of the wood are rendered so distinct as to appear to be magnified. It contains no albumen, or, if any, only the slightest trace." (Atlee.) Dr. Atlee places the utmost reliance upon these characteristics of the fluid, interesting illustrations of which are to be found in the detailed cases of his book, and one of them is alluded to by Dr. Thomas in the last edition of his work on Diseases of Women. Dr. Atlee does not, however, allude to

the fact that any other person had ever described this peculiarity of the fluid of cysts of the broad ligament. In Dr. Peaslee's work credit is given to Dr. F. Bird for having first pointed it out as early as 1851–2.

Fortunately tapping is not only of service in the diagnosis of cysts of the broad ligament. It is a most reliable therapeutic measure; the cyst, in the great majority of cases, does not refill, and both authors concur in the opinion that it is this form of disease which has furnished the cases reported of ovarian dropsy cured by a single tapping. "Dr. Charles Clay has had forty cases [of cyst of broad ligament] cured by a single tapping, and only six which filled again. I have myself known one to refill in but a single instance." (Peaslee.) Dr. Atlee states that for a long time he believed medication to be efficacious in preventing the re-accumulation of the fluid, but now looks upon the paracentesis as curative; the opening made by the trocar through the cyst wall remaining patulous, the bland fluid excites no irritation of the peritoneum, but is absorbed by that membrane as fast as poured into its cavity. The trocar wound, however, sometimes closes, and then the cyst fills again.

"Hence I have originated the operation of making a small opening in the linea alba, tapping the cyst, and afterwards drawing out and excising a portion of it, and returning the remainder, so that closure of the opening cannot thereafter possibly take place."—*Atlee.*

The second form of disease which bears the closest possible resemblance to ovarian disease is fibro-cystic tumour of the uterus. It is of rare occurrence, it is true, there having been up to 1869 only fourteen cases recorded, according to Dr. Peaslee, and he believes it to be much more frequent in this country than in Europe, having met with ten cases in the last two years, and not less than fifty since 1850. In regard to the extreme difficulty of a differential diagnosis, both authors are agreed; indeed both give cases where they were themselves mistaken, and the most distinguished ovariotomists have committed the same error.

"The resemblance to an ovarian cyst, so far as most of the physical signs are concerned, is quite complete. Especially if the cystic transformation has occurred in a pediculated subperitoneal fibroma, is the resemblance confirmed, for then the sound will show the normal depth of the uterine cavity. I have myself made a diagnostic error in these circumstances."—*Peaslee.*

"No amount of experience will avail the surgeon in making a differential diagnosis by the ordinary methods of examination. It cannot be elucidated by the sound. The tumour is extra-uterine, and may grow to an immense size; its development, instead of being slow, as is the case with the majority of hard fibroid tumours, may be as rapid as an ovarian tumour; the uterus may not be involved, or to a very small extent, not any more than is usually found in cystic disease of the ovary; palpation and percussion, apart from fluctuation, are identical in both kinds of tumour, and even fluctuation itself may be similar. . . . Indeed it is as difficult to distinguish between an extra-uterine soft fibroid tumour and a multilocular ovarian tumour, as it is between a cyst of the broad ligament and a unilocular tumour of the ovary. They are, however, both distinguishable, and by the same means, viz., *tapping. I believe a positive diagnosis can be made only by tapping.*"—*Atlee.*

As illustrative of the above statement that fluctuation is not a reliable sign, the case mentioned by Thomas[1] may be referred to, where, such a tumour being removed from the body and laid upon the table, "it was examined by a number of physicians, and nothing could convince them even then that its contents were not fluid, except section of the mass."

[1] Diseases of Women, 3d ed., p. 659.

We take from Dr. Atlee's work a description of the fluid obtained from one of these tumours :—

"The fluid was deeper in colour than a straw-yellow, and coagulated firmly by heat, the coagulum being whitish. Very soon after the fluid escaped it gelatinized spontaneously, so that the whole contents of the tub became one dense jelly-like mass, resembling the blood-clot in consistency but not in colour, and consisted, as I then thought, of fibrin. The fluid even gelatinized in the tin cup while filling from the canula."

A fluid then which *coagulates spontaneously*, seeming to be liquor sanguinis—blood minus the red corpuscles—is held to be characteristic of fibro-cystic tumours of the uterus. Such a fluid is found in no other kind of tumour, is never present in ovarian cysts. This is the teaching of Dr. Atlee. On the other hand, we do not find any stress laid upon this important diagnostic point by Dr. Peaslee. He says (p. 107), that "the fluid drawn by the first tapping is sometimes of a somewhat chocolate colour, or of that of coffee grounds, from the admixture of blood." Again, on page 147, he says, "the fluid obtained is generally darker than that obtained at first from an ovarian oligocyst, but exactly resembles that often found in polycysts. Sometimes, however, the fluid is light coloured, but almost always more or less opaque, and contains less albumen than that of an oligocyst or monocyst." In regard to the spontaneous coagulability of the contained fluid we can find mention in but two places; on page 106, where he gives, following Cruveilhier, two forms of uterine fibro-cystoma, one of which is said to contain such a fluid, and on page 149, where the points of differential diagnosis between these and ovarian cysts are placed in parallel columns; here it is stated that the fluid is "yellow, serous, like lymph and spontaneously coagulable. But it may be dark-brown, or hemorrhagic." Dr. Peaslee certainly does not recognize this quality of the fluid as the one great and deciding point upon which to make a diagnosis in a doubtful case, as does Dr. Atlee. He quotes Baker Brown to the effect that he knows of no distinguishing signs between these two forms of disease, and Spencer Wells, that he "knew of nothing but a rather darker, less pearly blue aspect of the tumour, which would put the surgeon on his guard," and alludes to the practice of Dr. F. Bird, who resorted to the explorative incision to complete the diagnosis, and says:—

"Without recommending this course, therefore, except with the limitations hereafter to be specified, I commend it as always safe, in any doubtful case, to assume, even after commencing the operation of ovariotomy, that it is one of uterine fibro-cyst, till the operation has progressed far enough to decide that point."

The study of the fluids of abdominal dropsy having been shown to be of the first importance in a diagnostic view, and a physical, chemical, or microscopic examination of them enabling us to decide many doubtful cases, it follows, as a matter of course, that an operation to obtain a specimen of the fluid for examination, becomes one of the necessary steps of diagnosis. This is distinctly taught by Dr. Atlee; the importance of tapping as an aid to diagnosis is impressed all through the book, and the doctrine is laid down that, generally, ovariotomy should not be performed without paracentesis having preceded it.

"Ovariotomy ought never to be attempted by the inexperienced surgeon, should he not be able to avail himself of enlightened counsel, without previously resorting to tapping as a means of diagnosis." (p. 47.)

With this doctrine *per se* we have no fault to find; it is judicious, and,

as before said, follows as a necessary correlative to the value of an examination of the fluids. But there are two very important collateral relations of this doctrine with which we certainly do find fault, as it is presented by Dr. Atlee, and we cannot but express our surprise that he should have either overlooked or purposely omitted them. We allude, first, to the danger attending paracentesis; and, second, to the substitution of a simpler and safer operation for it where the object is merely to obtain some of the fluid for examination.

So far as we can find, from careful reading of Dr. Atlee's work, there is *no* danger attending the operation of paracentesis. On page 49, under the head of "point selected for tapping," he speaks of carefully avoiding the enlarged abdominal veins, and of the possibility of wounding the bladder. He says, lightly enough, it seems to us, that, "should any vessel be divided by the trocar, it can easily be secured by acupressure." He does not mention the wounding of a vessel of the cyst-wall in polycystic tumours as a possible and unavoidable accident, nor inflammation of the cyst as likely to follow the operation, nor peritonitis from escape of irritating fluids into the abdomen, nor septicæmia; all of which are well-known complications or dangers. Upon page 128, in urging the value of paracentesis as a valuable therapeutic and diagnostic measure, within twenty lines he speaks of it twice as an "*easy* and *safe*" and a "simple and *safe*" operation. In fact, in combating the doctrine of Meigs of this country, and Safford Lee of England, that paracentesis is a very dangerous procedure, with a mortality of about fifty per cent., which may have been true at some period in the history of this subject, he has placed entirely out of view the fact that there is danger in the operation and has even approached denunciation of those who would hesitate about performing it.

We turn to Dr. Peaslee's work and present his views upon this important point:—

"Tapping an ovarian monocyst is not a dangerous operation, but attended by more risk, in ways which will be explained further on, than the preceding operation. [Paracentesis for ascites.] But tapping a polycyst *is a very dangerous operation*, and which should never be performed *except for diagnostic purposes*." (p. 174.)

"Tapping a monocyst, therefore, under the most favourable circumstances, is not a decidedly dangerous operation, though it is by no means unattended by risk. I once lost a patient within forty-eight hours after tapping a monocyst, apparently from mere shock. . . .

"But tapping a polycyst is always a dangerous operation. . . . None but a very imperative reason should, therefore, induce the surgeon to tap a polycyst; and I think it should never be done at all, unless he is prepared promptly to remove the cyst by ovariotomy, if the explorative tapping demonstrates that he actually has a polycyst to deal with.

"In case, then, we have to settle the question between a renal or perhaps an hepatic cyst, on the one hand, and an ovarian polycyst on the other, and the differential diagnosis, after resorting to all other means, is still obscure, it is justifiable, dangerous as is the operation in case it prove to be the latter, to tap the cyst—the understanding being that, if it prove to be a polycyst, it shall be without delay removed. And in such circumstances alone should a polycyst be tapped." (pp. 175, 176.)

It may be said that this is opinion merely, entitled to respect, but still the opinion of but one man. On page 196 Dr. Peaslee enters at length into the question, "Is simple tapping a dangerous operation in case of ovarian cysts?" and here he gives the figures. He quotes Dr. Meigs's opin-

ion, which Dr. Atlee scouts, that nearly one half of the first tappings of ovarian cysts he had seen, had proved fatal, and the statistics of Kiwisch, Courty, Fock, and others,[1] and says:—

"The result of the preceding data is that in Germany thirty-four out of one hundred and ninety-six die from the direct effects of a first tapping, or one in 5¾; while in England the figures are fourteen and twenty-nine, or one out of 2¼. The greater mortality in England is probably due to a larger proportion of polycysts in the cases reported."

Summing up, on page 199, he says: "Taking all the preceding facts into account, I think we may assume that, in case of polycyst alone, at least one-half die of a first tapping."

Possibly this is an exaggeration of the danger; possibly even figures are not here reliable exponents of facts, because collected in an earlier period of the history of the subject. We may, too, admit that the tendency of doctrine among ovariotomists is not to so close a restriction of paracentesis as is here implied, yet this certainly shows that there is danger in the operation. This, certainly, is a safer view for the general practitioner to take of the subject, and it is on his behalf, chiefly, that we have occupied so much space with this question, for into his hands fall, at first, the great majority of cases of ovarian disease; in his hands they remain for a time, and he is called upon very frequently to decide upon tapping. It behooves him to remember, that, if it be unjust to expect from him the knowledge and skill of an expert, neither will his reputation bear so well as that of an expert the unfortunate issue of a measure like this.

The simpler and safer operation which may be substituted for paracentesis is, of course, the use of the exploring trocar in some of its various forms. Dieulafoy's apparatus is probably the best, but the ordinary hypodermic syringe may be used instead, as first suggested by Dr. Walker. Dr. Peaslee has devised and figures a modification of Dieulafoy's instrument which he thinks answers every purpose. By even this, however, all danger is not avoided, for several fatal cases have resulted from its use. The danger, however, is reduced to the lowest possible point, so far as furnishing some of the fluid of a cyst for examination; it is, with rare exceptions, as satisfactory as tapping, and that it has escaped mention by Dr. Atlee we can only attribute to his unbounded confidence in the entire safety of the operation of paracentesis. That it is a valuable addition to our means of diagnosis we believe to be unquestioned.

We read with avidity the few paragraphs in Dr. Peaslee's work upon the spectroscope as an aid to the diagnosis of ovarian tumours. Surely, if the same instrument which reveals to us the constituents of the sun and planets shall prove equal to the task of showing us the composition of tumours in the most hidden parts of the body, we shall have another illustration of the value of its discovery, and another instance of the wonderful range of human intelligence. But thus far we have only the promise of assistance in this direction, a fair promise we acknowledge it to be, from the following paragraph, which is far too interesting to be omitted:—

"Dr. Thudichum has shown that luteine, the yellow colouring matter of the corpus luteum, exists also in the egg, in butter, in blood, in the yellow evacuations of nursing infants, and in the fluid contents of ovarian cysts (of the cow). In all these substances, luteine has a spectrum distinguishing it from all other colouring matters, and in each it also has slight modifications distinguishing

[1] See also Thomas, op. cit., pp. 663, 669.

each from all the rest. The spectroscope may, therefore, be expected to distinguish the ovarian cystoma from all other cysts; or may perhaps distinguish between oligocysts on the one hand, as originating from the ovisacs, and polycysts, which are developed in the ovarian stroma."

We cannot pursue the subject of diagnosis any further. All those diseases and conditions likely to be mistaken for ovarian tumours, and all complications existing with them, are fully considered in these works, at greater length, of course, and with abundant illustrative cases, in Dr. Atlee's. We may remark, however, that, in all the experience detailed in these two volumes, we find but one instance of a floating spleen mistaken for an ovarian tumour. Such a case once fell under our observation; by manipulation, the displaced organ could be pushed out of the iliac region and back towards its normal situation, so that the diagnosis did not present any great difficulty.

Before leaving Dr. Atlee's work we have one disagreeable duty to perform. It is to express our regret at the bad taste, to use the mildest possible term, he has shown in publishing, in so many instances, the name of the attending physician in connection with errors of diagnosis. Surely no good is accomplished by this, and much mortification must be caused, to say nothing of injury to a practitioner among his patrons, for no other reason than having failed to make a correct diagnosis of a most obscure disease, and upon which he could not obtain a treatise in his language! In regard to publishing the errors of experienced ovariotomists, there may be the excuse of desiring to make impressive the lesson in hand, yet we should think it far from pleasant to the victims, even if they can better stand it! The case related by Dr. Atlee on page 402, we must characterize as worse than bad taste, first, because there are two gentlemen of the same name in the same city, second, because the error is given entirely upon hearsay evidence.

Passing on now to other subjects, we find in Dr. Peaslee's work an interesting theory in regard to the causes of ovarian disease, which deserves notice. Stating and reviewing the different, widely different, theories which have been broached to account for this singular pathological condition, and finding them all unsatisfactory, he gives his own views as follows:—

"For me the non-parturient condition is the most active of all the predisposing causes of cystoma ovarii, after the first ten years of menstrual life have elapsed; since it has not yet developed its effects in young virgins. I apply this remark more especially to the oligocyst, and I do not recognize a distinction in this respect between unmarried women, on the one hand, and the married, who have proved to be sterile, on the other. The simple fact that the woman has never conceived, and gone through a period of gestation, she being twenty-five years of age and upwards, I accept as a predisposing cause of cystoma. Whether the sexual desires have been satisfied or not, appears to exert a far less important influence; for the married woman, provided she be sterile, seems as much predisposed to cystoma of the ovary as the unmarried after twenty-five years. Sexual desire exists in the mind of the patient, and is a matter of consciousness; but the physiological necessity of completing the cycle of reproduction is an element of the very nature and constitution of woman. . . It is, then, the non-gratification of the instinct for procreation, and not the disappointment of mere sexual desire, nor of affection, which determines the result in these cases."

The theory is plausible, and the facts upon which it is based have been observed by others, but they have been explained in another way. We translate from Courty, italicizing for ourselves:—

"Ovarian cysts are found in virgins, celibates, and widows, as well as in married women, which demonstrates the little influence exercised by coition upon their development. They are met with also in women who have never conceived, and in such a large proportion that it may be concluded, in all probability, that the ovaries were, *before the apparent development of the tumour, in a pathological condition incompatible with the normal accomplishment of their functions.*"[1]

The concluding portion of the first part of Dr. Peaslee's work is occupied with the consideration of the treatment of ovarian cysts other than by ovariotomy. Tapping, followed by injection of iodine, is a mode of treatment heard but little of since the advance of the major operation to a recognized position in surgery, but one of great value, if successful, even to a far less degree than maintained by its most enthusiastic supporter, Boinet, who is said to have resorted to it more than a thousand times! There are certain cases, however, to which it is adapted, in which it is preferable to ovariotomy, and these are carefully pointed out by the author and full directions given as to the mode of performing the operation. Its application is limited, first of all, to tumours having but a single cyst.

But are all monocystic tumours appropriate for the injection of iodine? Certainly not, for

"The nature of their contents exerts a great influence on the result of the operation. If the fluid is very dense and highly albuminous, oily or gelatinous, the operation will not succeed. Inflammatory products, such as flakes of fibrine, render its success very improbable; though if there be pus alone it generally succeeds. If the contents are merely stained by blood it also succeeds. If the cyst be adherent, the iodine injection will not succeed, since the cyst cannot be made to collapse.

"There remains, then, for the iodine injection only the simple monocyst, without complications of any kind as to its walls; with a clear serous, a sanguineous, or a purulent fluid."

We are told that the success of this plan of treatment in Boinet's hands, since it has been restricted to the proper cases, has been as high as "sixty-two cases out of sixty-seven cases."

Tapping and keeping a permanent opening in the cyst, preferably *per vaginam*, receives due consideration, and is of interest from the advocacy of, and success attained by, it by Scanzoni. The operation is stated to have been much improved by Dr. Noeggerath, of New York, who reports five cures out of six cases thus treated; full details of this new plan are given.

These are the only modes of treatment worthy of any consideration, in a curative sense, except the operation,[2] and to this the second part of the work is devoted. It opens with the history and progress of ovariotomy, in which our country has played so prominent a part, and we think it matter of congratulation that the claims of Dr. McDowell, of Kentucky, as the first operator, are here placed in permanent and available form for the profession and before the world. Animated by the teaching of the eminent men of the Scotch capital to whose instruction he had listened, sustained by his convictions of the feasibility of the operation derived

[1] Traité pratique des Maladies de l'Uterus, p. 929.

[2] The author shows that oöphorectomy is the correct term, and analogous to other compound words from the Greek, as iridectomy, but we think ovariotomy now too thoroughly fixed in our language by use to be displaced.

from close study of the anatomy of the subject, he achieved his triumph, unaided and alone, in a country which was then but little better than a wilderness. Since it was his fate to die before the operation had made any progress, we render to his memory that homage due to the pioneers of knowledge and benefactors of the race. We are happy to see that the dedication of both these works bear testimony to his merits.

Following the progress of this operation step by step, how sad is the history! not more so, perhaps, than the history of the advance of many other branches of human knowledge, yet presenting too many instances of opposition carried beyond the bounds of reason and good temper. But there are bright pages in this history, as well as dark ones. We trust that the student and young practitioner will note as they read, and profit by the lesson, the patience and candor and honesty and fairness shown by those most instrumental in establishing the value of the operation. Dr. Atlee, we are happy to say, presents these characteristics in a striking degree, and the extracts from his early papers on the subject given by Dr. Peaslee [pp. 251–2] show him in a very favourable light indeed, and worthy of standing in this history beside the noble form of Ephraim McDowell.

The time is past when it is necessary to answer the question whether ovariotomy is justifiable; not so long gone either, only "seven years," according to our author; yet past it is, and we are now more concerned to understand just the measure of its success. Upon this point there is plenty of information in the volume before us. The plainest and most striking idea of the amount of life saved by the operation in gross is given in the form of a mathematical problem, and we cannot see that any exception can be taken to this mode of stating it by opponents of the operation, if any such there yet be. Given, the average age of one hundred women operated on; calculate by the "expectation of life" tables the number of years given to those saved by the operation; deduct the number of years they would have lived, as shown by observation, with the tumours uninterfered with, and also the number of years lost by those who died from the operation; and you have the net result.[1]

"It may be shown that, in the United States and Great Britain alone, ovariotomy has, within the last thirty years, directly contributed more than thirty thousand years of active life to woman; all of which would have been lost had ovariotomy never been performed."

Confining our attention entirely to the most recent statistics, we select from the table on page 248 the six highest of this country in number of operations reported, and give their figures, no higher percentage of success being shown by any of the others in the table.

	No. of cases.	Successes.	Per cent.
W. L. Atlee	246	about 70 per ct.	70.
Kimball	121	80	66.11
Dunlap	60	48	80.
Peaslee	28	19	67.85
Thomas	27	18	66.66
Bradford	30	27	90.

We will also place here in connection the statistics of the two leading operators of England, Spencer Wells, and Mr. Clay of Manchester, and

[1] The same calculation has been made by Mr. Hutchinson, and is given in Holmes's Surgery, vol. v. p. 63.

the leading operator of Scotland, Mr. Keith, who is also distinguished as being the most successful operator in the world.

"Up to September 1st, 1871, Mr. Wells had completed the operation of ovariotomy four hundred and forty times. . . . Out of the four hundred cases Mr. Wells saved seventy-three and a quarter per cent., and of his last forty cases (since the four hundred) only eight have died. He thinks the average will yet be even ninety per cent. of cases in private practice, without excluding those extreme cases in which the operation is performed as a forlorn hope."

"Up to December, 1871, Dr. Clay had performed two hundred and fifty ovariotomies, with one hundred and eighty-two successes—72.8 per cent."

"Dr. Keith has performed the operation of ovariotomy one hundred and thirty-six times. He has attained to the highest success yet achieved in Europe in this department of surgery, having saved eighty-one out of his first one hundred cases, and thirty of his next thirty-six. . . . These remarkable results are ascribable to his great accuracy as a diagnostician; to his extreme delicacy and cautiousness as an operator, and, not least, to his most conscientious and unremitting care during the after treatment. When he had operated one hundred and thirty-six times, he had never made a mistake in diagnosis."

There is a marked difference in the success of the operation in different countries, which is an interesting feature of the subject, the study of which is likely to throw light upon the measures and precautions most necessary to insure success. Thus—

"In the United States . . . the general success is probably not above sixty-three per cent. In Great Britain at least seven-eighths of all the operations have for several years been performed by two experienced ovariotomists (Mr. Wells and Dr. Keith), and the general average is not less than sixty-six per cent. In France, however, the general success had fallen to 39.67 per cent. in 1867, instead of 46.15 in 1864, and is now probably not less than fifty per cent. In Germany, the average success at the beginning of 1870 was 41.66 per cent. against 27.27 at the beginning of 1864."

There is an interesting inquiry here as to the reasons for this difference, and an examination of the various causes to which it has been attributed. Without following this section in detail we may say that the conclusions arrived at are, that the ill success of the operation on the continent of Europe depended upon faulty modes of operating rather than upon less hardy patients, and especially upon "a failure to appreciate the necessity of perfect cleanliness in all the details of the operation which has always been so carefully secured in this country and Great Britain." This seems to be the testimony of French and German writers, and they certainly must be accepted as competent witnesses.

In regard to all these tables and statistics, showing the success of the operation and especially as bearing on the relative merits of individual operators, there is, of course, one very important question—will they bear examination? that close and scrutinizing examination which is well expressed by the well-known motto that such facts are to be *weighed*, not *numbered*? How is it, for instance, in regard to the selection of cases for operating? If one operator rejects all such cases as present bad features and submits to the knife only those which most certainly promise recovery, he will of course be able to show far better results than one who operates on all indiscriminately. We are happy to find here, in regard to some of the leading operators of Great Britain, and Wells, Clay, Baker Brown and Keith are mentioned, the distinct statement, that the great success obtained by them has not been by the selection of cases. We do not find

any positive statement upon this point in regard to the operators of this country, but certainly will not attribute the omission to intention. While the course of some of them as to selection or rejection of cases may be unknown or in doubt, those occupying prominent official positions are so situated as to make the course they pursue in this respect open and certain to all men.

The fourth chapter of Dr. Peaslee's work is an exceedingly interesting one, treating of the "principal conditions predisposing to a favourable or to an unfavourable result of ovariotomy." It is divided into five sections, and from the subdivisions of these we will touch upon one or two which seem to be of especial interest. Thus the "temperament and disposition of the patient" is considered by the author of great importance; not more so, however, than is done by other writers. A hopeful disposition, with good courage, and above all strong confidence of recovery, are very favourable, and, on the contrary, despondency and despair seem to almost insure disaster. "So important do I consider these matters that I should decline to operate on a patient who entirely despairs of recovering."

It cannot but be of general interest to know the decision of the question as to whether previous tapping increases the mortality of those who, after them, submit to ovariotomy. It has been believed that tapping produces adhesions about the site of the puncture, and that in this way the danger is increased. It is here shown that adhesions are not thus produced, and a negative answer is also given to the question in general. Repeated tappings, causing great reduction of strength, would of course have a very unfavourable influence, but a wide range of experience showed that the mortality is not quoted higher among those who have been tapped, and Spencer Wells is quoted in support of this view.

Under the head of "Previous treatment of the case," we should have been glad to see something said of the futility and of the positive injurious influence of medication with mercury, iodine, and other active remedies. It cannot certainly be, judging from our own experience, because the author has not repeatedly met with ovarian tumours which had been treated in this way, and although it may be charitable to attribute the medication to an error of diagnosis, it would be none the less to the patient's benefit to impress the wisdom of abstaining from debilitating drugs until all questions of diagnosis were cleared up.

A very important section of this chapter is the one on the "characteristics of the operator tending to success in ovariotomy." The necessity of perfect cleanliness, of gentleness and delicacy of manipulation, are impressed, and there is shown the "influence of experience on the part of the operator." This has already been alluded to; in the paragraphs quoted in regard to the relative mortality of different countries it is stated that the average rate of success in the United States is kept down by the number attempting the operation who are "mere physicians, who never think of performing any other surgical operation, even of the simplest kind," and we wish, for the credit of the profession, that we could term this an exaggeration, but do not feel justified in doing so. The necessity for experience on the part of the operator is held to be greater for ovariotomy than for surgical operations generally, on account of the constantly varying complications, either in kind or degree, or both, and of the unforeseen emergencies which may arise at every step of the operation. The position is sustained by tracing the increasing success of various operators with increasing experience. A table is given of four hundred cases by

Mr. Wells, the decreasing mortality of each successive hundred being shown, the deaths running 34, 28, 23, 22. Dr. Clay, of his first one hundred and thirty-seven cases saved 71.53 per cent.; of his last one hundred and thirteen he saved 74.34 per cent. Dr. Keith saved seventy-eight per cent. of the first fifty cases, and eighty-four per cent. of the second fifty. Thus, statistics certainly sustain the author in his propositions upon this point. He is sustained, too, by other authorities: Dr. Thomas is convinced that, "if the histories of all the single operations performed by different practitioners in this country were published, they would present a lengthy and by no means pleasing exhibit."[1] It is unnecessary to say that such recklessness should be exposed and condemned. The effect upon the statistics is little compared with the lives sacrificed, and those who undertake the operation without careful study of the subject, without having seen the operation performed by others, and without other surgical experience, should be held to a strict accountability.

Among influences affecting the successful issue of a case of ovariotomy we should place none above the anæsthetic administered and the mode of administering it. Singularly enough it is not accorded a place by itself in Dr. Peaslee's enumeration. It comes in under the head of vomiting during and after the operation, but the subject is of such general interest that we copy in full what he says of it:—

"It is in respect to its tendency to produce emesis that chloroform is decidedly objectionable as an anæsthetic in ovariotomy. Though it has been generally used in Great Britian, Dr. Clay doubts, since serious sickness is produced by chloroform both during and after his operations, if it has, on the whole, contributed to his success. Of Dr. Keith's reports of his earlier cases, almost all speak of the duration after the operation of the chloroform sickness. He has used ether since his fifty-second case, and doubts if, on the whole, chloroform is a boon to mankind. Mr. Wells has of late commonly used the bichloride of methyl as an anæsthetic. It contains one equivalent less of chlorine than does chloroform, and is given in the form of spray. Dr. W. L. Atlee uses one part chloroform, liquid measure, to two of ether. Kœberlé uses chloroform. Generally in this country the pure ether is used, [?] and, I think, answers all the requirements as well as any other anæsthetic, if properly administered, while it is also quite as free from objection as any other. I have never seen it produce vomiting during the operation, excepting in cases where it was administered within two or three hours after taking food, as never should be done; and then with the effect only of promptly evacuating the stomach. I have never seen vomiting produced by it after the operation. I, however, record my protest against keeping a patient continually, during the operation, from the use of any anæsthetic, at the point of narcosis indicated by stertorous breathing, and lividity of the lips and face. It is simply anæsthesia, and not asphyxia, that is required; and I have seen more than one fatal result of ovariotomy in very debilitated subjects, which might fairly be attributed to the reckless use of the anæsthetic. As soon as stertorous respiration is produced, the anæsthetic should be withdrawn, and afterward re-applied so as to keep just short of this symptom. Complete anæsthesia is, in itself, a sufficient approach to death, even in case of a patient not much debilitated; and it is simply unpardonable uselessly to superadd to it another still more dangerous condition."

We thank the author most heartily for this protest, for these noble words! Would that they were not needed! but, certainly, there is not within the range of surgery any procedure so important in results, requiring such conscientious study to prepare for, and such careful watchfulness in carrying out, so lightly undertaken and so frequently bungled as

[1] Op. cit. p. 730; see also Hutchinson—Holmes's System of Surgery, vol. v.

the production of anæsthesia. That it is "anæsthesia, not asphyxia," that is wanted, and that the condition is a "near approach to death" will bear repetition.

One of the great dangers of ovariotomy being shock or collapse, especially when the operation is prolonged, it would seem that ether, from its less depressing effect, would be the preferable anæsthetic. At any rate, operators are not agreed as to this matter, and there is an evident casting about for a remedy of this class free from objections, as an instance of which we may mention that within a few months we saw Marion Sims perform the operation while the patient was kept under the influence of nitrous oxide gas. Under these circumstances we venture to suggest a trial of a combination long before the profession, but we believe not yet used to the extent it deserves, and, so far as we know, not yet tried at all in ovariotomy. We allude to the mixture recommended by the committee of the Medico-Chirurgical Society of London—one part of alcohol, two parts of chloroform, three of ether. In considering the treatment of shock, the author says, "if there is reason to apprehend danger from this source, the inhalation of the vapor of alcohol together with the anæsthetic is a judicious precaution." But it is not alone from theoretical considerations that we recommend it. After many years' experience with it, after repeated use of it in extensive railroad injuries, and other accidents where shock is present to a marked degree, we are convinced that it is a combination of anæsthetics peculiarly adapted to an operation so severe, depressing, and often protracted, as ovariotomy.

In the examination of Dr. Peaslee's book we have held strictly to points of interest to the general practitioner; we have by no means considered all such; to do so would occupy far more space than we have at our disposal. We cannot then be expected to follow in detail the various steps of the operation itself, which would be of interest to experts only. We can only say, briefly, that every step of the process from the preparatory arrangements to the after treatment is given with the fullest detail; not only every step of the operation is described, but every different mode of performing it which has been advocated, and every proposition which has been made in regard to it. As an instance, we may mention that the section on "treatment of the pedicle" occupies forty pages, every device being described, and most of the instruments figured, including a novel and ingenious plan and instrument of the author's, for who would write upon ovariotomy without proposing a new method of treating the pedicle? We may say of the operation, as described, and of course performed by Dr. Peaslee, that it is characterized by the most scrupulous attention to details, stress is laid upon even the most insignificant. Reading this part of the book carefully, and examining it in comparison with other writings upon the subject, we cannot escape feeling that the difficulties of the operation are drawn in too deep colours. We would not call in question the honest conviction of the author upon this point, will not attribute this deep shading entirely to a desire to check the rage for operating by incompetent men, will grant the importance of attention to minute details, even to artificial serum for the hands, certainly would not sanction any other view of the matter than that he who goes into the operation can never be sure of what he will find on his way, yet, after all, we feel very certain that, if text-books on surgery so dilated upon and reiterated the dangers of amputation, of lithotomy, and of the operation for hernia, it

would tend very much to discourage those who were turning their attention to them, and embarrass those who undertook them for the first time.

The treatment of the patient after ovariotomy is fully detailed, and in regard to the necessity of the most scrupulous care and attention to this, and as to its influence upon the result of the case, there can be no two opinions. One measure of after-treatment the author claims as original, and he deserves credit for its introduction. We allude to intra-peritoneal injections in the treatment of septicæmia following the operation. That the remedy exerts a powerful influence for good, in this most discouraging and usually fatal complication, is strikingly shown by the detail of cases given. Convincing proof of the efficacy of this measure may also be found in a report of three cases of double ovariotomy by Dr. T. G. Thomas,[1] and the daily ranges of temperature being given, the beneficial effect is most strikingly shown by the fall of the thermometer after every application of the remedy.

Coupled with this is a measure for the *prevention* of septicæmia. The author proposes to introduce a tent into the lowest angle of the wound, in all cases where a collection of fluid in the peritoneal cavity was to be expected.

"The tent to remain undisturbed till the fourth day, if no symptoms occurred to demand an earlier withdrawal; when it was to be withdrawn, and the cavity examined for the presence there of fluid—the examination to determine whether the opening should be finally closed or the injections be commenced."

We cannot but think it singular that he should prefer for this process an opening left in the exterior abdominal wall to one made in a depending position, through the Douglass *cul-de-sac* into the vagina. Certainly, looking at the topography of the region it would seem as if that course was especially laid out and designed for a drainage-channel after the operation, providing a ready and certain way of escape for all irritating fluids, and an entry way for the administration of disinfectants and antiseptics. Of these advantages many operators have availed themselves, and, indeed, Dr. Peaslee claims (p. 434) to have been the first to introduce a bougie through the roof of the vagina into the peritoneal cavity, and he notices the fact that Dr. Keith, at an early date, made use of drainage tubes in this way. If we are correctly informed, Dr. Marion Sims now always makes use of such a tube in the operation. Kœberlé has used a glass tube, thus introduced for drainage purposes; but whether always, or only under certain circumstances, we cannot say, not having access to his works, and we looked with interest for information upon these points in Dr. Peaslee's book; but although generally so full and minute, we found it lacking here. We should then have expected from the author fuller explanation and more explicit statement of reasons for the abandonment of a plan which has been pretty fully tried, which has every theoretical consideration to sustain it, which is certainly growing in favour, for one which, so far as *à priori* reasoning goes, is not nearly so good a plan. Moreover, when he makes such a statement as this: "I have not used the glass tube as first practised by Kœberlé, since I consider the use of an open tube *to be an invitation to septicæmia*," we have a right to ask a statement in full of the grounds upon which such an opinion is based. We cannot see that the admission of air to the abdominal cavity through this tube, the cavity being thus thoroughly drained, is nearly so

[1] American Practitioner, July, 1872.

likely to produce the complication as the penning up of fluids for four days, and then admitting air through the tent-opening, while injections can be as well administered by the one route as by the other.

One other matter belonging to the future of ovariotomy does not receive from Dr. Peaslee the notice which we believe it merits. We allude to enucleation of the tumour as first practised by Dr. Miner, of Buffalo. Dr. Peaslee mentions the plan in two or three places, but expresses the opinion that its applicability is very limited. On the contrary, the originator claims that "all ovarian tumours capable of removal" can be removed by it "with advantages so manifestly superior as to commend it for trial before resorting to any other plan."[1] The plan has been successfully followed by several operators, has received very high encomiums, and we look upon it as a most decided improvement in the operation.

In closing our review of these works we cannot avoid again expressing our appreciation of the thorough study, the careful and honest statement, and candid spirit which characterize them. In Dr. Peaslee's work we have reference to all which has been written by others, besides the results of his own experience and study, making a treatise upon the subject which is not only complete but exhaustive. Dr. Atlee's experience has been immense, and in his work it is faithfully recorded and clearly presented. Let it not be understood that his book is only for the professed ovariotomist; every practitioner whose daily duty brings him to the diagnosis of abdominal tumours and conditions will find in it a most useful and reliable guide.

J. C. R.

ART. XIX.—*The Principles and Practice of Surgery.* By FRANK HASTINGS HAMILTON, A.M., M.D., LL.D., Professor of the Practice of Surgery, with Operations, and of Clinical Surgery, in Bellevue Hospital Medical College; Visiting Surgeon to Bellevue Hospital, etc. Illustrated with 467 engravings on wood. Royal 8vo. pp. 943. New York: Wm. Wood & Co., 1872.

IN this work of about 950 pages, subdivided into 42 chapters (24 devoted to General, and 18 to Regional Surgery), an endeavour has been made to supply "the instruction necessary to a full understanding of all the subjects belonging properly and exclusively to Surgery: the volume being intended as a text-book for students, and at the same time as a direct and complete guide to the surgeon."

It is claimed by the author, that

"Each department has been treated with as much conciseness as was consistent with precision and completeness; much of the literature of surgery has been omitted; questions which affect only remotely the conduct of the operator have been discussed with brevity; and there has been substituted, whenever it seemed necessary to a thorough comprehension of the subject, a more minute description of the surgical anatomy, and of the most approved operative procedures, than is usually found in similar treatises."

That so excellent a surgeon and well-known writer as Prof. Hamilton would make in a work such as this under review a positive contribution

[1] See this Journal, October 1872, p. 391.

to the literature of his profession was a matter of course; that he could within the limits assigned himself do all that he has claimed to have done, was perhaps equally of course an impossibility. We have read his work with much pleasure and profit. Its most marked peculiarity is its eminently practical character. Its author has evidently thought most upon diagnosis and treatment. Surgical pathology does not seem to have been with him a favourite subject, and he has everywhere hurried over the *how* and *why* to describe *what* exists and *what* is to be done for it. His views are his own, sometimes decidedly at variance with those of certain of the "authorities;" and he has expressed them confidently—bluntly, indeed, occasionally.

The error almost inseparable from the task of writing a complete treatise on surgery in a thousand pages, viz., that of giving too much attention to certain topics and too little to others, has not altogether, we think, been avoided. It is true that the relative importance of the various subjects discussed is very much a matter of judgment; still we are of the opinion that, *e. g.*, if the whole subject of wounds, other than gunshot, is to be treated of in twenty pages, seven of the twenty ought not to be devoted to *arrow* wounds. If *tetanus* must be disposed of in five pages and *pyæmia* in one, seven pages should not be given to *hydrophobia* and *glanders*. If *apnœa from drowning* deserves five pages, *extravasation of urine* should have more than seven lines. Again, is the fitness of things fully preserved in occupying twice as much space in the consideration of *ranula* as of *cystitis;* or as much in that of *cleft palate* with the operations for its relief, as of *stricture of the urethra* with its treatment? That the consideration of the *healing of ulcers by transplantation* should extend over more than half as many pages as that of *hip-joint disease*, is more excusable, since to Prof. Hamilton belongs the credit of priority in the establishing of new points of cicatrization by transferring healthy skin to the central portions of old ulcers.

Inflammation, as might have been expected, introduces the work, and in the chapters upon it and its terminations, there are strongly brought out the characteristics already referred to, viz., brief reference to pathology, clear statements of local and general signs, and positive views as to the relative value of remedial agents and methods of treatment. *Bloodletting* is declared "a spoliative remedy of great power, and experience has demonstrated that inflammation may generally be treated successfully without its aid;" and *mercurials* are not at all referred to except in cases of syphilitic origin. In the treatment of erysipelatous inflammations we notice that the tr. ferri chloridi is recommended in ɱij. doses every four hours. The benefit to be derived from such small quantity we cannot appreciate, for before any constitutional effect of the iron could be produced, the disease in its natural course would have gotten well of itself.

The articles on Gangrene and Tetanus are to a very large extent the same as those on the same subjects in the author's "Treatise on Military Surgery."

In the general consideration of wounds, reference of course is made to the antiseptic dressing, which is not regarded as possessing the extreme virtues that have been claimed for it. Gunshot wounds are treated of at considerable length; operative interference being urged in cases of injury of the skull; a more than usually favourable opinion entertained of "Howard's sealing method" in penetrating wounds of the chest; and disapproval expressed of probing wounds of the belly and treating the subjects of such

by heavy doses of opium. As illustrating how "doctors disagree," it is interesting to compare the remarks of our author on skull wounds with those of Stromeyer, who would entirely exclude trephining from military practice as "useless in some and unnecessary in other cases." Respecting "autopsy wounds" it is stated that "it is not from all bodies recently dead that poison can be conveyed. It is only from such as have died of certain maladies." On one occasion a saw scratch received while making an autopsy of a man killed an hour before by a blow on the head, caused us no little trouble, from which we did not fully recover for several weeks.

The chapter on "Venereal Diseases" briefly but clearly presents the views now generally entertained by syphilographers, and the treatment recommended is judicious and in accordance with those views. In the treatment of epididymitis no favourable opinion is held of strapping, which it is maintained will be found to be either inefficient because too loose, or so tight as to strangulate the cord and necessitate speedy removal. Puncturing the tunica albuginea or opening the tunica vaginalis is held in perhaps higher esteem. Mercurials are advised during the primary stage of syphilis as well as in the secondary, and under certain circumstances during the transitional and tertiary stages, though in the latter "with more caution than in the secondary forms, always in minute doses, never to the production of ptyalism and rarely should its use be continued for any great length of time." Of syphilization as practised by Boeck while in New York city upon patients under his observation, the author says, "that in each instance the improvement was unmistakable, and in one or two extremely bad cases the progress towards recovery was remarkable."

In the chapter on "Lesions of the Vascular System" we find that the ligature is by the author held in highest esteem for the arresting of hemorrhage, he not recognizing the force of the great objections to its use so strongly urged by the advocates of torsion, acupressure, etc. Its application to veins he does not regard so dangerous as has long been held. In view of facts within the knowledge of every operator, and such testimony as has been presented by Dr. S. W. Gross (see this Journal for January and April, 1867) and others, is it not time that the doctrine of great danger in ligating veins should cease to be inculcated by surgical writers and teachers?

The application of absorbents and discutients to inflamed lymphatic glands is declared to have frequently increased the difficulty, and never to have produced the effect desired. What will the profession do if it cannot, as heretofore, direct that all glandular swellings, acute and chronic, shall be painted over with the tincture of iodine?

Thirty-five pages are devoted to "Aneurism," its varieties, symptoms, treatment, and anatomical instructions for the application of the ligature in various regions of the body. The "primary pathological condition which terminates in arterial lesion," viz., "Atheroma," is declared to most generally undergo fatty degeneration, the calcareous degeneration ensuing only in exceptional cases. Is it not a fact that in this country the calcareous is decidedly more frequent than the fatty degeneration?

Among the various therapeutical measures recommended we fail to find any mention of *ergotin*, which, perhaps, promises better than any other agent. In the method of treatment other than by ligature, though both flexion and compression are spoken of, nothing is said of their combination except that when much pain is caused by flexion, it "must be diminished, and moderate digital or instrumental pressure may be employed as

adjuvants." We have seen, in the practice of the late Prof. Blackman, of Cincinnati, complete cure of popliteal aneurism effected within two hours by combined flexion and compression. The treatment by galvano-puncture is not very favourably considered, the result being in the majority of cases only the formation of a soft clot, if any at all, the consequent exposure of the patient to the danger of embolism, and the possible development of inflammation of the sac and adjacent tissues. In the paragraph on the ligaturing of the ulnar artery in its lower third we find it stated that the *ulnar* margin of the flexor carpi ulnaris is the guide to the artery; and that the tendon, after the primary incision is made, is to be drawn to the *radial* side. We think that the operator will reach the artery more readily if he cuts down on the *radial* side of the tendon, between it and the flexor sublimis.

The abdominal aorta is said to have been tied five times in all. Certainly Cooper, James, Murray, Monteiro, South, McGuire, and Watson have tied it, not to mention Stokes, who embraced the vessel with a wire tightened by Porter's compressor.

The chapters on "Fractures and Dislocations" are what might have been expected of one who has written the best work on these subjects ever published, and the author's peculiar views on various points are those with which the profession is already familiar through that book. As respects the use of anæsthetics in the primary examination of cases of fracture it is said, as truly as forcibly:—

"It is certain that those surgeons who handle broken limbs rudely are either very stupid or very inhumane, but there are some men who never do otherwise; and the only hope for the patient who is so unfortunate as to fall into their hands is, that he still retains sufficient consciousness and sufficient strength of voice and of limb to successfully defend himself. If such surgeons as I have described are permitted to practise, they ought not, at least, to be allowed to render their patients insensible by anæsthetics."

If the reader has any further doubt that Prof. Hamilton can write sharply when so disposed, let him glance over the paragraphs upon the subject of shortening in fracture of the femur, which conclude as follows:—

"In other words—to state a matter of fact very plainly—through ignorance, inadvertence, or intentionally, these men do not tell the truth," *i.e.*, in claiming to make perfect limbs.

The immovable dressings are not much favoured: "On the whole, therefore, with few exceptions, all of these forms of dressing have been found by myself eminently unsatisfactory." No notice is made of that variety of the plaster-of-Paris dressing known as the "Bavarian dressing," which has in our hands answered an excellent purpose, and which we like better than any other immovable dressing, since it permits ready inspection of the limb at any time.

In the preparation of the chapters on "Amputations" and "Excisions," some use has been made of what the author has already published in his "Military Surgery," but very much less than might have been anticipated. The directions as to the methods of operating, particularly at the articulations, are full and clear, and deserve careful study. In amputations the choice of operation, whether circular or flap, is to be determined by locality and circumstances of the particular case.

In excisions of the elbow-joint made for recent fractures, preference is expressed for the H incision, the straight incision being recommended in

operations on account of chronic diseases of the joint. To remove the ulnar nerve out of harm's way, Lister recommends pushing it to the inside with the thumb-nail, along the back of which the knife is entered and carried first across the joint. In excisions of the shoulder it is recommended that no effort be made for the first week or two to carry up the lower fragment, the arm being simply supported by a sling under the wrist.

Excisions of the knee-joint, as substitutes for amputations in gunshot injuries, are declared to have "proven especially unfortunate."

In the chapter on "Tumours," a classification has been adopted more nearly allied to the clinical than the anatomical, the author believing that "there is not sufficient ground for its acceptance [the latter] at present by those who are pursuing the study of practical surgery." Sarcoma as a separate general class of tumours is not treated of, its varieties being mentioned under fibrous and bony tumours. Under "cystic tumours," those affecting bursæ are described at unusual length, and several pages are devoted to the anatomy of natural and acquired bursæ in the several parts of the body, the author endeavouring "as far as possible to supply the omissions" in Monro's work. Carcinoma is declared to be "probably, in most cases, primarily local." A full recognition of the truth of this opinion would go far towards securing an early and thorough removal of tumours of this kind, and perhaps alter very materially the gravity of the prognosis in cases now given over from the start to certain death. In the removal of cancers the knife is preferred as quicker, easier, and surer than any caustic application; and electrolysis is pronounced, as compared with the knife, "equally painful, more tedious, more liable to such accidents as erysipelas and pyæmia," and very little likely to effect decomposition and absorption of the growth.

The remainder of the book is devoted to "injuries and surgical diseases" of the several regions of the body, and, in the multitude of subjects of interest ably treated, we can only notice a few points that have specially attracted our attention. The chapter on "Injuries of the Head" is full of such practical suggestions and directions as will be most interesting and valuable to the busy general practitioner. In scalp wounds sutures are declared "in general inadmissible." Is not the idea of their danger to a large extent a creature of the imagination, like that of the danger in ligating veins, curing an old ulcer, or stopping a chronic discharge? The author's views on the use of the trephine and elevator in gunshot fractures have already been noticed; in fractures other than gunshot, where there is depression and compression, he, in common with almost all surgeons, advises operative interference, which, however, is "more difficult and less urgently demanded in children than in adults."

Dr. Galt, the inventor of the conical trephine, is spoken of as of *South Carolina*, instead of Virginia.

We regret that the sub-chapter on intracranial abscess was written before the publication of the case recently reported by Assistant Surgeon Weeds, U. S. A. (*Nashville Journ. of Med. and Surg.*, April, 1872, p. 156); a case in which there was accurate diagnosis, bold treatment, and most gratifying result, and which deserves a place in the literature of surgery beside those of Dupuytren and Detmold, referred to by our author.

Sixty pages are devoted to the eye and ear, their diseases and injuries and operations required.

In the succeeding chapter on the "Surgery of the Nose," in treating of rhinoplasty, when the entire nose is gone, the author describes as the first

operation, one "for the closing of the nasal chasm," an operation which has not been thought necessary, but which is regarded as "preliminary and essential to success."

In the operation for harelip no pins are used, and silk is preferred to silver wire for sutures.

It is said of operations for the removal of the tongue, "most of the cases have terminated fatally in a very short time; and, notwithstanding the statements to the contrary, we must be permitted, for the present, to doubt whether any have made a complete and final recovery."

In removals of the upper jaw, free incisions without special regard to any after-scarring are preferred, as also preliminary ligaturing of the carotid.

The best summing up of the relative value and applicability of laryngotomy and tracheotomy that we have ever seen, is that made by Prof. Hamilton, as follows:—

"Laryngotomy, practised at the crico-thyroid space, is preferable in all cases of apnœa from drowning, from the inhalation of mephitic gas, hanging, œdema glottidis, abscess, and ulcerations of the larynx, in most cases of intra-laryngeal growths, and whenever foreign bodies are lodged in the ventricles.

"Thyrotomy, with or without incision of the crico-thyroid ligament, may be substituted for laryngotomy, so called, in certain cases of intra-laryngeal growths, when, in the opinion of the surgeon, it would be difficult to remove these formations safely and thoroughly without having at the moment a perfect view of their attachments.

"Tracheotomy above the isthmus of the thyroid gland is to be preferred in all cases of diphtheria and of croup, when the gland is not in a condition of hypertrophy. Tracheotomy below the isthmus will be reserved, therefore, for those rare examples of diphtheria or croup accompanied with hypertrophy of the thyroid gland, and for those equally rare examples in which the surgeon undertakes the removal of foreign bodies impacted in either the right or left bronchus."

In the article on "bronchocele," a page is devoted to a statement of the author's observations in the Valais Canton, Switzerland; a statement very interesting, but possibly a little out of place, considering the size of the work and number of subjects requiring treatment.

In operating for the relief of "distortion of the neck from burns," we are told "that we cannot remedy, completely, such deformities," and "should content ourselves with moderate attempts to improve the condition, by small and well-applied incisions, for which only small tegumentary flaps will be required;" and well-merited censure is passed upon those surgical writers who "have given us wood-cuts, professing to represent the appearance of patients before and after operations," which "were false representations."

As illustrative of the relative value of the knife and caustic in the treatment of cancer of the breast, a case is mentioned in which "during a period of about eight years a lady had a scirrhus, which originally occupied the breast, removed seven times," six times by the knife and once by caustics, the recurrence in the former cases never occurring in less than a year, in the latter "almost immediately." Is it not probable that microscopic examination would show that this was a case of sarcoma instead of carcinoma?

After the removal of the breast, every effort is directed to be made toward securing union by adhesion, "since experience has demonstrated that, the more speedily the wound closes, the less will be the chances of the

recurrence of the malady." Evidently, while believing in a local origin of the disease, our author does not accept one conclusion that has been drawn therefrom, that the more completely the breast with the skin covering it is removed, and the larger the wound that is to heal by granulation, the more likely is it that there will be no recurrence of the disease.

The chapter on "Hernia" is interesting and valuable. An unfavourable opinion is expressed of the value of the various operations that have been devised for the "radical cure," which are declared to depend for their "success upon those temporary products of inflammation which constantly disappear on the restoration of the tissues to a condition of health, and which disappear all the more rapidly where they are subjected, as in the present case, to an unremitting strain and pressure."

Of the several causes of strangulation, the "sudden descent of an unusual amount of intestine or of omentum, or of other viscera," and a congested, inflamed, and swollen condition of the viscera in the sac, are "by far the most common, and the most efficient."

The consideration of "vaginal cystocele and rectocele," among hernias, seems somewhat out of place, although in the strict sense of the term they are varieties of hernia; we think it would have been better to have treated of them in the chapter on the surgery of the female genito-urinary organs.

Injections in the treatment of "psoas, vertebral, and lumbar abscesses," are not favourably considered: "Indeed, I have never seen any benefit from either tents or injections at any period of the progress of this class of purulent collections."

It is to be regretted that, as the last touches were not put upon the work until the first of July of the past year, no reference has anywhere been made to the use of the subcutaneous aspirator, which has been so successfully employed in tapping the chest, the bladder, the knee-joint, and abscesses in various parts of the body.

With reference to "hæmorrhoids," a point or two may be noticed—horse-back-riding is not believed to have any decided influence in producing them; in opposition to the majority, the author does not approve of opening the external variety when inflamed, but would leave them "to subside slowly under absorption, or perhaps to suppurate, the latter of which is the least frequent result;" and suspected pyæmia is mentioned as having occurred in one case under observation, which however terminated favourably. Recently in Cincinnati, death from septicæmia followed the ligation of internal hæmorrhoids, and we are familiar with the particulars of a case fatal from tetanus.

The last two chapters of the book are devoted to the "Surgery of the Genito-Urinary Organs," male and female; "congenital defects of the urinary apparatus" being first treated of. No reference is made to Maury's cases of operation for the relief of exstrophy of the bladder, Ayres's, Holmes's, Bigelow's, and Wood's being mentioned, and the sentence added that "we know of no other operations for the relief of the deformity which can be pronounced to be even partially successful."

In the treatment of "organic stricture of the urethra," decided preference is expressed for "gradual dilatation;" "electrolysis as a means of cauterization and dilatation" being pronounced "painful, uncertain, and liable to be followed by peri-urethral abscesses," and possessing "no compensating advantages."

Respecting "lithotripsy and lithotomy," it is stated in general,

"1, that lithotripsy is most easy of execution and most successful in women;

2, in adult males, especially in those of middle life, whose urethræ and bladders are in a tolerably healthy condition; 3, in cases where the stone is small, phosphatic, or brittle; or, if we speak with reference to age alone, it may be said that lithotripsy is to be reserved especially for those examples of stone in which the age of the patient is over fifteen or seventeen years. While, on the other hand, lithotripsy is peculiarly difficult, and sometimes wholly inapplicable: 1, when the urethra is strictured or exquisitely irritable; 2, when the bladder is very irritable, inflamed, ulcerated, contracted, hypertrophied, or sacculated, or when it is in a condition of extreme atony; 3, when the prostate is much enlarged, as so often is found to be the case in old age; 4, when a pretty large stone is associated with a narrow but healthy urethra, a condition which sometimes obtains in childhood and infancy; 5, when the stone is of very great size, or very hard, or encysted; 6, when there are a large number of calculi; 7, when the kidneys are suffering from serious organic disease, or the general health is greatly impaired."

In cases of vesical calculi in the female, those stones that "cannot be removed by forceps without dilatation, and which can be completely crushed, demand lithotripsy;" while in other cases we conclude that the vesico-vaginal operation is preferred, though it is not so stated definitely. In the treatment of "hydrocele," "the long incision" is preferred; injections of iodine being stated to be followed by quite as many failures as successes. For the relief of "varicocele" the "removal of a large tegumentary flap" from the scrotum is advised, ligation of the veins of the cord "being liable to fail altogether, and in no instance probably have either of the methods ever accomplished a complete cure."

In the securing of the pedicle after ovariotomy the "whip-cord ligature, applied as I have already directed" (by transfixion and tying separately upon opposite sides), is believed to be the method which will answer all the exigencies in the largest proportion of cases. The usual statement is made respecting the utter failure of therapeutic agents in effecting the removal of fibroid tumours of the uterus. The recent experiments of Hildebrandt[1] with ergotin subcutaneously administered may cause an entire change of opinion upon this point. "Extirpation of the uterus" is refused a place "among legitimate surgical expedients."

As a whole, Prof. Hamilton's latest work is one that will add to his already high reputation. It is not, we think, for students the best book of the kind in our language; nor can it ever be regarded as a substitute for a surgical library; but it is full of valuable practical suggestions and directions, and as the embodiment of the results of the long study and experience of an eminent surgeon it should be in the possession of all who have occasion to treat surgical diseases and injuries. P. S. C.

ART. XX.—*Diseases of the Throat: A Guide to the Diagnosis and Treatment of Affections of the Pharynx, Œsophagus, Trachea, Larynx, and Nares.* By J. SOLIS COHEN, M.D., Lecturer on Laryngoscopy and Diseases of the Throat and Chest, in Jefferson Medical College, Philadelphia, etc. etc. With 133 Illustrations on wood. 8vo. pp. xvi., 582. New York: William Wood & Company. 1872.

WE have read this work with much satisfaction and take pleasure in inviting to it the attention, not only of physicians specially interested in

[1] See this Journal, Oct. 1872, page 567.

the subjects of which it treats, but of general practitioners. It is a work adapted also to the student as well as to the practitioner. The former will find it an admirable treatise upon the affections which it considers, and the latter a practical guide to their treatment.

As will be seen by its title the treatise is a comprehensive one, and for that reason it is all the more welcome. We may say, indeed, that it is really needed. Subjects are here considered, which are intimately related to those commonly treated of in works on diseases of the throat, but which are not usually found in them, and for information concerning which, special treatises, or general works on surgery, must be consulted. A work like the one before us, therefore, if written by an intelligent, industrious, and conscientious practitioner, cannot but be a useful one. Dr. Cohen seems to possess all three of the qualities mentioned, and exhibits, moreover, as claimed in the preface, "an honest endeavour to interpret facts and observations as they appeared in the light of his own understanding." With this latter characteristic, which finds expression throughout the book, comes, naturally, a "record differing in some respects from the records of others;" but, with the ample experience of the author, this only heightens the interest of the work. We may add that, to a thorough knowledge of his subject, the author adds a readiness with his pen and a faculty for description which are noticeable everywhere, and which are by no means always inseparable from valuable medical treatises. One therefore finishes the perusal of the book with a feeling of freshness and of satisfaction, which a mere compilation, however good, could hardly afford.

A few words from the preface will give a more precise idea of the design of the work.

"The limits of a moderate-sized volume preclude the composition of an exhaustive treatise on the subject of Diseases of the Throat. It has been thought advisable, therefore, while presenting a comprehensive view of the entire field, to dwell longer upon subjects which are important by their frequency and by the fresh light shed upon them by recent investigation; and to treat concisely of those points which by their infrequency, on the one hand, or their thorough discussion in the standard medical works of the day, on the other, seem less to call for amplification."

The work contains fifteen chapters. The opening one is on diseases of the throat in general, and contains a description of the appearance of the mucous membrane of the throat in health and in slight deviations from the normal condition, and judicious cautions to physicians in regard to mistaking the result of slight irritation of the membrane for serious disease. The chapter includes a statement of the causes of irritation leading to inflammatory affections of the throat, in which the simple inhalation by non-smokers of an atmosphere impregnated with tobacco smoke is mentioned as an exciting element.

The second chapter treats of the importance of ordinary inspection of the throat, of the anatomy and the histology of the larynx, and of laryngoscopy and rhinoscopy. To these two arts an admirable guide is afforded. The general practitioner will be surprised to learn what portions of the throat may sometimes be brought to view by the use of the tongue-depressor, or even by the voluntary efforts of the patient.

"Sometimes we can even see the upper circumference of the entire larynx, especially if the epiglottis be titillated with the tip of the tongue-depressor so as to excite a slight motion of gagging. Some patients depress their tongues and open their mouths so well, that, looking down upon the parts, we can see

these structures without the use of any tongue-depressor at all. Cases are on record, few in number, it is true, in which, by such voluntary effort of the patient, a view has been obtained of the larynx down to the vocal cords."

Our author gives the following definition of the glottis:—

"They [the true vocal cords] form, with the space between their free edges, *the glottis;* their sharp borders are *the lips of the glottis*, and the chink or fissure between these lips is the *rima glottidis*. These terms should not be confounded."

Dunglison's definition of the glottis is this: "A small oblong aperture, in the larynx, comprised between the *chordæ vocales.*" Palmer's is this: "A small oblong aperture situated at the summit of the larynx or windpipe, between the vocal chords."

These two definitions are not sufficiently comprehensive, but we are inclined to prefer a definition of the glottis which would make it an aperture, simply, as tending to simplicity. We would say, with Dr. Cohen, "close the glottis," "open the glottis," "a wide glottis," (page 59) and "changes of form produced in the glottis" (p. 63). But, instead of "open the chink of the glottis" (p. 60), we would say, *open the glottis.* Instead of "lessening the length of the chink of the glottis" (p. 63), *lessening the length of the glottis;* and we would substitute the words *the vocal cords* for the word "glottis" in the expressions, "tension in the glottis" (p. 63) and "lips of the glottis" (p. 56). Instead also of "floor of the glottis" (p. 386) we would say, *superior surface of the vocal cords.* The expression which Dr. Cohen had previously used, namely, "floor of the upper laryngeal cavity," seems to be better than "floor of the glottis." We also prefer the expression "*spasm of the larynx*" to "spasm of the glottis" (p. 396).

We present the following as a specimen of the happy faculty of description possessed by Dr. Cohen. He is speaking of the mucous membrane of the larynx.

"The epithelium is the ciliated variety found covering the whole mucous respiratory tract, with the exception of a narrow stripe of the squamous epithelium of the œsophagus, which mounts the larynx posteriorly, continues down the internal face of its posterior wall, and covers the free portion of the true vocal cords from one end to the other. On the inferior face of the cords, the ciliated epithelium is again encountered."

In chapters III., IV., V., VI., and VII., are considered Erythematous, Phlegmonous, Ulcerative and Membranous Sore-throats, Diphtheria, the Sore-throats of the Exanthemata, the Syphilitic Sore-throat, and the Sore-throat from Burns and Scalds.

In tonsillitis, Dr. Cohen thinks highly of the scarification or puncture of the inflamed gland.

"A good method is to pierce the tonsil in its central portion with a long, narrow, sharp-pointed bistoury, and to cut the instrument out, horizontally, by an incision through the gland into the mouth."

Although these incisions are not universally recommended, he feels convinced that they are very beneficial. The relief is often immediate, and the suppurative process is frequently averted.

A few cases are appended to the description of this affection and termed "Ulcerative Tonsillitis." We do not perceive that the suppurative process took place in these cases, and yet, if there was simply superficial ulceration of the tonsils, the cases do not illustrate any pathological condition described by the author.

The remarks on Membranous or Herpetic Sore-throat, and on Diphtheria, are excellent, and the same may be said of the chapters on the Sore-throats of the Exanthemata, on Syphilitic Sore-throat, and on Sore-throat from Burns and Scalds.

Dr. Cohen does not recognize the scrofulous diathesis as an origin of deep ulcerations of the pharynx and larynx: at all events, he makes no mention of it as a source of such lesions, although he remarks upon a destructive process in the nasal cavity which is engrafted upon this diathesis. But some intelligent observers certainly consider that this condition of the system may be the origin of pathological processes in the throat which may approach, in destructive action, those met with in the later forms of syphilis. It must, however, be acknowledged that, frequently, the term scrofulous is employed because no special cause for the lesions can be discovered. It is, moreover, very possible that some of these cases may be really due to syphilis, the earlier manifestations of which were either so slight as to be overlooked, or were subdued by remedies, given soon after the appearance of the primary sore, in an amount not sufficient to entirely eradicate the constitutional affection. The determination of the cause in such cases must therefore, necessarily, be exceedingly difficult.

Professor Isambert, of the Paris School of Medicine, has contributed to recent numbers of *L' Union Médicale*, a series of articles on the strumous ulcerations of the pharynx and larynx, and the essay has been published in the *Practitioner* for January, 1872. In these papers a distinction, of obvious clinical and therapeutic importance, is drawn between those lesions of the larynx and pharynx which depend on specific infection, or on tuberculosis, or on malignant degeneration, and those which, more benign in their course, are of simple strumous origin. The writer says that he acquired his knowledge of this discrimination through the importance of anti-syphilitic treatment against certain ulcerations, and from the discovery that tonics and not alteratives were needed. Admitting that in a certain number of cases, the scrofulous lesions may be complicated by syphilitic or tuberculous manifestations greatly involving the diagnosis, the author gives characteristic signs by which to determine the more benign type of the disease.[1]

In M. Mandl's late work,[2] "Angine Scrofuleuse" may be found mentioned, and we think it worth while to translate a portion of the remarks made upon this subject.

"Hamilton first, and after him several authors (Fougère, Isambert), have described an ulcerative angina of a scrofulous nature. The affection commences in an insidious manner; the tissues assuming at this stage a violet or wine color. Examination of the throat brings to view a yellow pimple which soon ulcerates. There exist sometimes other concomitant manifestations of a scrofulous nature, such as tonsillitis. The soft palate is more frequently the seat of an ulcerative process, according to Fougère, and the posterior wall of the pharynx according to Isambert; then come the pillars, the uvula, and the tonsils. The edges of the ulcerations, which are not very deep and are indolent, are thin, rounded, irregular, sinuous and fringed. The base is uneven, mammillated, fungous, sometimes grayish and sanious, at other times yellowish and covered with mucó-purulent matter. The mucous membrane in the vicinity of the ulceration is somewhat inflamed, and occasionally fungous granulations are noticed. The honey-combed and mammillated appearance of these ulcerations is almost identical with that of the *plaques muqueuses*. The submaxil-

[1] Quoted from the Boston Medical and Surgical Journal of March 28, 1872.
[2] Traité Pratique des Maladies du Larynx et du Pharynx.

lary and parotid glands are sometimes engorged; there is dysphagia, the food returns through the nose, and the voice is nasal. The course is chronic, and perforations take place, followed by cicatrices, bridles, and especially adhesions between, for instance, the veil of the palate and the posterior wall of the pharynx.

"All observers are not agreed as to the scrofulous nature of this affection. Some (Med. Soc. of Vienna, 17th February, 1871) see in these deviations from the normal condition only the result of hereditary syphilis. This remarkable circumstance may be cited in support of their opinion, namely, that these ulcerations are met with most frequently in adults, and never in infancy, so susceptible to scrofulous affections. Those who defend their scrofulous character put forward as an argument the inefficiency and even the danger of iodo-mercurial preparations; while hygienic influences, and especially cod-liver oil, in large doses, give the very best results. But it is known that cases of syphilis occur, as Dolbeau has remarked, in which tonics alone are employed, and in which mercurial preparations are harmful, as all physicians admit. This question, therefore, seems to me to merit constant investigation."

Semeleder also[1] says:—

"Scrofulosis gives occasion in some cases to diseases of the larynx. Hitherto there have only been observed sclerosis and increase of volume of the mucous membrane, and of the submucous cellular tissue; these may produce obstinate constrictions; but they may also, without doubt, proceed to ulceration."

Then follows an account of the case of a girl, of fourteen years of age, who had ulcerations upon the posterior wall of the pharynx and upon the soft palate. Local treatment was followed by cure with an adhesion of the soft palate to the posterior wall. The patient subsequently had a large, deeply-burrowing ulcer, upon the dorsum of the tongue. Syphilis was suspected; but an examination, and treatment by mercurials, gave negative results. A cure was, however, effected by iodide of potassium internally, and by a solution of iodium and glycerine locally. Concerning this case, Smeleder remarks:—

"For simple lupus the development and the cure were too speedy. In such infiltrations the diagnosis, especially between syphilis, lupus, and scrofulosis, is often very difficult."

To return to our author. The special affections of the tonsils, the palate, and uvula, the pharynx, and the œsophagus, are next treated of in separate chapters.

In the removal of the tonsils, when permanently enlarged, Dr. Cohen prefers excision by the knife, assisted, in the usual manner, by the double vulsellum, to treatment by iodine, etc., by caustics, or by excision with any of the various tonsillotomes.

"The subject of cleft palate, though belonging to the surgery of the mouth, rather than to that of the throat, is mentioned here, merely to draw attention to the success attained in splitting the edges, instead of paring them, the operation being believed to be unique in that particular."

In speaking of naso-pharyngeal tumours, and the operations for their removal, Dr. Cohen refers to the method proposed by Langenbeck, which consists in the resection of the nasal process of the upper maxillary bone and the nasal bone. This operation is not, however, we may remark, that adopted by Langenbeck for the removal of tumours resembling the one removed by Verneuil, in the case copied by Dr. Cohen from the *Gazette des Hôpitaux*. To these tumours Langenbeck gives the name retro-max-

[1] Caswell's translation, p. 161.

illary, considering them much more formidable than the ordinary naso-pharyngeal polypi, and has devised for their removal his osteo-plastic resection of the upper jaw, which exposes, in a wonderful manner, the various ramifications of these truly polypus-like growths, and enables the operator to replace the bone after their removal. (*Deutsche Klinik*, 1861, p. 281.) Langenbeck employs this operation occasionally, also, for naso-pharyngeal polypi.

The affections of the nasal passages are satisfactorily treated of in a chapter of eighty-two pages. The author's experience in the study and treatment of these troublesome affections has been ample, and its record is most welcome.

In the portion relating to coryza the following statement appears:—

"In the healthy state the mucous membrane of the nose does not secrete mucus, or even serum. Many individuals have no occasion at all to use the handkerchief for the removal of any nasal secretion, unless it be excited by the inspiration of dust, irritating vapours, etc. The membrane is constantly moist, it is true, but it is not by reason of any secretion, but in consequence of an absorption of the moisture condensed upon it from the expiration. When the membrane is chilled by the cold, be this by its inherent properties, or by the influence of the terminal fibrilla of the nervous system, the mucous membrane no longer absorbs this halitus of the breath, and a portion of this moisture accumulates for a while in the tissue of the mucous membrane, or just beneath it, giving rise to the sense of puffiness or fulness so familiar to all who have suffered from the complaint. After a while these tissues become saturated, and will take up no more fluid, and a process of exosmosis is set up by which the watery constituents of the fluids coursing in its tissue are directed towards the surface, and drip from the nostrils, constituting the characteristic discharge of coryza, which is at first mere water, the exhalation of the moisture in the expired breath."

We confess to reading the above with some surprise. The mucous membrane of the nasal cavity proper, is certainly richly supplied with glands, and we have supposed that they secreted, normally, some sort of fluid.

After a short chapter on the affections of the frontal sinus, comes one on the affections of the larynx and trachea. These receive the consideration due their importance, and one hundred and seventy-four pages are devoted to them. It is probable that the author's experience has been greater in these affections than in any of the others of which the work treats, and this chapter is therefore worthy the special attention of the reader.

Regarding laryngeal tuberculosis, as a primary affection, Dr. Cohen says:—

"The author discards altogether the notion of any distinct disease to be called laryngeal-phthisis, whether it be the tuberculous ulceration of the laryngeal mucous membrane so often observed in general phthisis early in the disease, or whether it be the extensive ulcerative chondritis and perichondritis of the older authors. It is altogether doubtful if ever a case existed in which tuberculous disease was confined to the laryngeal structures.

"Simple chronic laryngitis, catarrhal or ulcerative, is often a curable affection; but, on account of its resistance to treatment, or its persistence in spite of it, or its total neglect, proceeding gradually from bad to worse, it will produce the subjective symptoms, and, for that matter, all the objective symptoms also, which writers have been pleased to ascribe to laryngeal phthisis."

And with regard to a deposit of tuberculous matter in the larynx in persons affected with phthisis:—

"The most he has seen, and that very rarely indeed, was one or two, or perhaps as many as three or four, isolated, white spots, the size of a large pin's head, which, in cases of slowly progressive pulmonary tuberculosis, retained their position and appearance upon the mucous membrane of the laryngeal walls, without change, for months and months."

Rokitansky's opinion is very decided against the idea of a distinct tuberculous disease of the larynx. He says:—

"Tuberculosis of the larynx, as a primary and independent affection, is so extremely rare, that we feel inclined to doubt its existence. It is almost invariably developed as a consequence of pulmonary tuberculosis, and then, as a general rule, not until the affection has established itself as pulmonary phthisis, and made considerable progress."

In regard to this secondary deposit of tubercle in the larynx, Rokitansky says, elsewhere,—

"The most common position of tubercle in the air passages (where it is very commonly met with), is the larynx."

The majority of modern pathologists agree, as we believe, with Rokitansky on this point. Of those less modern, Louis may be mentioned as holding a different opinion. He says:—

"I have not, in a single instance, met with tuberculous granulations in the substance or on the surface of the epiglottis, larynx, or trachea; so that inflammation must be regarded as the most frequent cause of the ulceration of those parts."

Of the treatment of croup, Dr. Cohen says:—

"The main principle in view is to sustain strength, while assisting the patient through the natural course of the disease."

He relies principally upon nourishing diet and tonic treatment, with the free use of steam, and, in the severer cases, upon stimulation with alcohol and carbonate of ammonia, and upon the inhalation of the vapor of lime. When an emetic seems to be indicated, he employs alum.

"I have never had occasion to resort to tracheotomy to save the life of a child with croup. . . . It is due to the treatment above narrated to say, that I have seen the life of a patient preserved through it, if not by means of it, for whom the performance of the operation of tracheotomy had been declined by more than one surgeon, as offering no chance of a successful result."

The important subject of growths in the larynx occupies 46 pages.

Concerning the influence of phthisis in the development of laryngeal neoplasms, Mackenzie states, that "neither syphilis nor phthisis, nor any other constitutional condition, appears to favour the growth of these neoplasms."

"My own experience differs very markedly from that of the author quoted. Leaving out of consideration, as he does, those 'imperfect papillary growths' which 'occasionally appear on the posterior wall of the larynx, and on the mucous membrane covering the vocal cords and the inner surface of the arytenoid cartilages in the latter stages of laryngeal phthisis'; and although I do not find with him that 'this is the exception', but rather a frequent occurrence, I have met with a large proportion of cases in which distinctly formed growths, of circumscribed outline, and often of tolerably large size, existed in cases of phthisis at a very early stage, as well as in cases where the ravages of the disease were readily detected on physical examination of the chest."

In a subjoined table of sixty-six cases of growths, occurring consecutively in Dr. Cohen's private practice during the last five years, twenty-two cases occurred in patients with phthisis.

There seems to be a marked difference of opinion among observers regarding this point. While a few, such as Tobold and Mandl, coincide with Dr. Cohen, others, and as we believe the majority, agree with Mackenzie.

It would be satisfactory to have seen a more complete table of the cases of growths which have occurred in our author's practice, in which were stated the age, sex, and occupation of the patient, and the means of removal employed.

Dr. Cohen makes mention of the method of restoring the voice in paralytic aphonia by the external manipulation of the larynx, described by Dr. Oliver in the No. of this Journal for April, 1870, apparently with the impression that Dr. O. supposed that full approximation of the arytenoid cartilages could be made by pressure on the wings of the thyroid cartilage. This, however, is not the case. In the article referred to, partial approximation, only, of the cords was supposed to be produced. Closer approximation was believed to be effected by the action of the in-going current of air upon the cords, in consequence of their valvular form. It seems probable that the means employed were, of themselves, instrumental in exciting the action of the vocal cords, for, in more than one of the cases reported, a vocal sound could be produced while pressure on the wings of the thyroid was being made, and could not be elicited when pressure was removed. Moreover, the fact that sound was produced by inspiration, before it could be produced by expiration, seems to prove that this valvular form of the cords was partly instrumental in exciting their action. It is possible that the action of the laryngeal muscles is stimulated by the manipulation, and that approximation of the cords is furthered thereby. This, if true, would go to show that the method has a value, and that there is little, if any, risk to the vocal apparatus incurred by employing it.

Our author mentions a very large epiglottis as a possible cause of spasmodic cough. Three cases of this affection in three brothers are related, in each of whom the epiglottis was found to be of unusual size. The spasms occurred generally at the table.

"I feel inclined to the opinion that the epiglottis of these gentlemen sometimes becomes impacted into the larynx in deglutition, thus producing the spasm of suffocation; a condition which I have known to occur repeatedly in a young child who was subject to suffocative paroxysms, and whose mother I taught the method of relief by running her finger down beneath the epiglottis and pulling it up. This little fellow was also subject to spasmodic cough. A similar cause excites spasmodic cough in a little child under treatment at the moment of writing.

"A spasmodic cough, of less intensity, sometimes occurs in affections of the ear, the influence being conveyed, probably, through the chorda tympani nerve. Consequently, in cases of obstinate cough, without sufficient cause for it appearing in the throat, the condition of the organs of audition should be carefully examined into."

The last chapter of the work treats of diseases of the neck affecting the deeper tissues of the throat secondarily, such as tumours of the neck, mumps, affections of the thyroid and thymus glands, etc.

A convenient table of reference to the subjects treated of in the text follows, and the book ends with a copious index.

We have only to add that the mechanical portion of the book is excellent; that the paper and letter-press, and the illustrations, which are plentifully supplied, are all that could be desired, and that the volume is, in all respects, a handsome one. H. K. O.

ART. XXI.—*Recent Systematic Works on Anatomy.*

1. *Quain's Elements of Anatomy.* Seventh edition. Edited by WM. SHARPEY, M.D., ALLEN THOMSON, M.D., and JOHN CLELAND, M.D. (In two volumes.) London, 1867.
2. *Die Anatomie des Menschen in Rücksicht auf die Bedürfnisse der Praktischen Heilkunde;* Bearbeitet von Dr. HUBERT V. LUSCHKA. (In six volumes.) Tübingen, 1862–1869.
3. *Handbuch der Systematischen Anatomie des Menschen,* von Dr. J. HENLE. (In three volumes.) Braunschweig, 1855—(unfinished.)
4. *Lehrbuch der Anatomie des Menschen mit Rücksicht auf Physiologische Begründung und Praktische Anwendung,* von JOSEPH HYRTL. Eleventh edition. Wien, 1870.
5. *Der Bau des Menschlichen Körpers mit besondere Rücksicht auf seine Morphologische und Physiologische Bedeutung.* Ein Lehrbuch der Anatomie für Aerzte und Studirende von Dr. CHR. AEBY. Leipzig, 1871.
6. *Traité d'Anatomie Descriptive.* Par J. CRUVEILHIER. Fifth edition. Avec la Collaboration de MM. les Docteurs MARC SÉE et CRUVEILHIER Fils. (Three volumes.) Paris, 1871.
7. *Traité d'Anatomie Descriptive.* Par PH. C. SAPPEY. Second Edition. Paris. (Three volumes.) 1867–1872.

THE history of text-books of anatomy is the history of a wide-spread cultivation of medical science. As we cannot conceive of an "Albinus" or a "Vesalius" in any other form than a ponderous folio—such, for example, as we see lying open by the figure of Vesalius in the picture by Hamman, neither can we imagine a "text-book," as we now restrict that term, in any other than an octavo, or the less frequently seen quarto. The size of the editions would appear to be on a kind of inverse ratio to that of the books themselves. Folios occasionally yet appear from the medical press with all the glory of fine circumstance about them; but it is perhaps a spirit of reminiscence that actuates their preparation—one that is little in harmony with the necessities of the hour. These splendid volumes find their true place in the libraries of our societies, while the text which is consulted by the practitioner, and quoted by the anatomist as authoritative, lies between covers of a convenient bulk, and, what is equally to the point, is sold at a moderate rate.

It would appear to be a favourable time when, as we perceive by the books quoted at the head of this article, several representative works have been attracting attention in their new dress, and one remarkable treatise is about approaching completion, to make a few selections from them here and there; to call attention to what we may, without presumption, pronounce their deficiencies; and to indicate that an age which creates a steady and increasing demand for good anatomical writing is one ready to receive kindly much needed improvement in teaching.

The conservatism of the anatomist is so great that his writings are yet marked with a nomenclature which is in great part arbitrary. Prof. Leidy's effort in 1861[1] is, apart from Barclay's scheme of nomenclature in 1803, so far as we know, the only important attempt to simplify the use of anatomical terms. In France Chaussier and others have improved upon

[1] Elements of Human Anatomy. Philadelphia, 1861.

the names of Winslow. Sömmerring has also exerted some good influence in the German school. Much, however, remains to be done, especially among the English speaking people, who, on the whole, have been backward in accepting innovations. The English cling tenaciously to their traditions. Douglas's translation of Winslow in 1796; Knox's translation of H. Cloquet in 1830; Birkett's translation of Von Behr in 1846, and in this country Pattison's translations of Cruveilhier in 1844, have never become favourites. As a result of this exclusive spirit the English teaching has been singularly uniform; and about the same modicum of knowledge, however paraphrased, is found in about all the text-books excepting always the present edition of Quain.

A student who has been thus indoctrinated in his British catechism would find himself imperfectly prepared to answer a series of questions selected almost at random from a continental "anatomie." The cause of this is not difficult to ascertain. The English anatomist has been less content to pursue descriptive anatomy for its own sake than his transmarine brethren, and doubtless if he were asked for an honest expression of opinion would despise the minute studies of the continental observers. He was early satisfied with the condition of the general basis of descriptive anatomy, and his main object was to apply it to the necessities of practice. Hence we find that the writings of John Bell led to the foundation of surgical anatomy, as the studies of John Hunter ended in the school of physiological anatomy; and although these labours have added undying lustre to the British name, they have tended rather to retard than to advance the cause of systematic anatomy as now understood. Knox in 1844 lamented the absence of a good descriptive anatomy. This want was in part supplied by Jones Quain's elements. Appearing as early as 1828, it became the basis of much which subsequently appeared; its editions have steadily increased and lately have been graced with the labour of conscientious editorial talent. The American edition of Quain, by Prof. Leidy, is worthy of a place in the history of the work, and we are sure our readers would have been pleased had Leidy's notes been retained in the London edition now before us.

We have taken Quain, therefore, as the representative of English anatomy. It retains its modest title—Elements of Anatomy—the editors restricting their labours to bringing the histological portions up to the present time, and in introducing new matter to the original sheets in the form of appendices rather than interpolations; a method of editing which, in our judgment, shows great good sense.

From the Germans we have taken Henle to be the representative book, and have ventured to place on either side of it Luschka and Hyrtl; two works very different in treatment. Luschka is professedly an applied anatomy, though with the exception of the descriptions of the minuter parts is really an extensive treatise, having purely descriptive features. Hyrtl's Lehrbuch is a succinct presentation of the anatomy as taught in this day in Germany; its type is elementary. Much curious and valuable learning is given in the shape of notes, while the literature and history are well nigh perfect. We have this high authority for accepting Henle as the leading German work. He says of it: "It is an anatomy in which is displayed both in matter and style the very highest ability." It will be remembered that Henle was one of the collaborators in the production of the Encyclopedia of Anatomy,[1] a work which marked the re-

[1] This is based upon Der Baue des Menschlichen Körpers von Samuel Thomas von Sömmerring, 1800.

naissance of the German school. His *Handbuch* may be said to be the completion of a plan begun at that time.

The work of Aeby is admirably conceived. It embraces the design of the framework of man—grasps vigorously at the essentials of a philosophical plan—and to this end is well illustrated with diagrammatic schemæ and wood-cuts of original drawings from nature. A number of elaborate tables of nerves, muscles, etc., are among the novelties of this volume. Special attention is given to homologies throughout.

Cruveilhier has been chosen as the French anatomy. It is more difficult here to select a master-text. The great work of Sappey is, we understand, the favourite one with the profession in France. We have observed that Dr. Austin Flint, Jr., in his recent publication upon the *Physiology of the Nervous System*, has relied in great part upon Sappey for his descriptive anatomy. His claim, therefore, as a first-class authority is conceded. But there is little that is distinctive in his plans of teaching from that of Cruveilhier. Both authors are given to make extended physiological comments, and employ throughout the same nomenclature in all essential points, excepting perhaps in the arrangement of some of the branches of the nerves, among other features, where we conceive the departure from the classification of Cruveilhier is not always an improvement. We would be failing in our purpose were we to omit mention of the beauty of Sappey's illustration of development of the cranial bones, especially the superior maxillary, sphenoid, and temporal, as well as the relations of the general view of the face with the base of the skull, in fig. 64, vol. i., and the plan of construction of the atlo-occipital articulation as compared with that of lower animals, figs. 187 to 190, p. 530, *Ibid.* Hirschfeld, we observe, follows closely the descriptions of Cruveilhier.

We will confine ourselves, in the space afforded us, to the osseous, muscular, and nervous systems; and will begin with the former.

Osseous system.—The descriptions of the bones in Quain, and the English authorities generally, are inferior to those of the continental writers. They read like abridgments from some more extended narration. With the Germans, however, particularly Henle, we detect a style which denotes for the author an intimate acquaintance with the bones themselves. We feel that the writer has made himself an authority by study. By way of illustration of the exactness of the account of the *temporal bone*, we may mention the identification of the sutures marking the primary divisions of the bone. It is not a little odd that the suggestive sections of the bone on page 128 (Knochenlehre) should not have influenced the editors of Quain to modify their account of the anterior wall of the petrous portion of the bone, or to have introduced into the description of the "Glaserian fissure" (itself a name unworthy to be retained) the curious relation between it and the roof of the tympanic cavity (*tegmen tympani*). The *tegmen* is not mentioned by the English writers, though having an important part to play in the composition of the bone, as well as presenting some practical bearings (for the latter see Hyrtl, p. 255). The interesting observation that the canal for the tensor tympani muscle (*canalis musculo tubarius*) is within the *pars tympanica*, is likewise unnoticed. Equally ignored is the "tympanic spine" described by Henle[1] two years before the publication of Quain. Neither do English observers fare better. No allusion is made in any text-book to the rudi-

[1] Tageblatt der 40 Versammlung deutscher Naturforscher und Aerzte in Hannover, 1865, 68.

ment of the tympano-hyal bone seen to the anterior and inner side of the styloid process.[1] But a more glaring defect, as we conceive it, lies in the general divisions of the bone. The student can trace little that is in common with the descriptions of the ossification of the immature and the mature bone. Indeed, he can form a very imperfect notion of the relation of the auditory process, and the vaginal process (the "tympanic plate," Q) with the primordial tympanic ring, or of the variant significance of the mastoid and spinous processes. Neither is Ayrtl free from this conventionalism. Blumenbach[2] gives us a far better method of description. Aeby, in his descriptions of the cranial bones, not content with basing them upon the primal centres of ossification, goes to an extreme, we think, in making the detail of the obscure theory of vertebral segmentation of the skull apply to the descriptive anatomy of the separate bones. Thus, in treating of the temporal bone, he divides his account into a *vertebral* (*i.e.*, squamosal and tympanic portion), and an equivalent to the *auditory* (*i. e.* petrous) portion. The origin of the *tegmen tympani* from the petrous divison is illustrated in an unique figure (fig. 84, B., p. 203), and its relations to the glenoidal fissure on p. 205 well shown.

The fact of which we have been occasionally reminded that the labour devoted to writing treatises bears an imperfect relation to their completeness, is seen in so simple a fact as the development of the *frontal sinus*. Blumenbach[3] asserts that it is formed about the end of the first year. The development may be retarded by disease, particularly hydrocephalus. Scarpa,[4] while stating that the sinus is absent at birth, "has forgotten that Albinus described many of these (mucous) sinuses in the fœtus at nine months." According to Henle the sinus does not appear until the second year, and to Sappey, from the sixth to the eighth year. Humphry[5] places the date of its appearance as late as that of puberty. Now, with the exception of Henle and Sappey already referred to, the text-books with which we are acquainted do not allude to this point. The student desiring information would find therein little or nothing to his satisfaction. Yet it is a feature of some importance in the localization of diseased action.[6]

The ligamentous system.—We have selected the tibio-femoral articulation for study. The account of the mechanism of the knee-joint as given by Quain is chiefly an addition to the text by the editors, and like all similar work is admirably done. If we were inclined to be critical we might wish that the spiral character of the sum of the articular planes (a plan of construction in full accordance with the latest investigation) had been more explicitly stated. The description of the crucial ligaments as the true internal laterals to the condyles it were well to insist upon. The position of these ligaments (the anterior tense in extension, and relaxed in flexion; the posterior relaxed in extension and tense in flexion) are ad-

[1] An Introduction to the Osteology of the Mammalia. By W. H. Flower, London, 1870.

[2] Geschichte und Beschreibung der Knochen des Menschlichen Körpers. Göttingen, 1786, p. 121.

[3] Prolus. anat. de sinibus frontal., 1779. See also *supra*, p. 101.

[4] Minute Anatomy of Bones, trans., by Dr. J. D. Godman in Anat. Investigations, 1824, p. 129. "The frontal sinus is the only one whose rudiments are obscure in the fœtus of nine months, *yet it is not entirely wanting.*"

[5] Human Skeleton, 246.

[6] See the papers on Rickets by Dr. J. S. Parry, in late numbers of this Journal.

mirably illustrated by diagrammatic figures. But how tardy the implied acknowledgment of the accuracy of Jno. Bell's[1] description and figures fifty years before!

The brothers Weber (1836) in their well-known researches upon the mechanism of the articulation inaugurated the theory of spirality and described the crucials as above given. Henle (p. 157 Bandelehre) qualifies the accepted notion by stating that the anterior ligament is tense in extreme flexion. Figure 122 would appear to inform us that the posterior crucial may be also tense in extension. It is amusing to notice in Cruveilhier, who follows the text of the Webers, at the same time using the wood-cuts copied from Henle, that the figure contradicts the text it is designed to illustrate.[2]

Fusciæ.—The best descriptions of fasciæ are undoubtedly found in French works. The chapter upon Aponeurology, in editions of Cruveilhier prior to the present (it is here, unfortunately as we believe, omitted) is the most complete to be found anywhere. Perhaps the source of this excellence can be traced to the writings of Bichat, who may be said to have created this division of anatomy.

The relations of the fasciæ to surgical anatomy are so important, and remembering the almost independent origin of the continental and English schools, we are prepared to meet with some discrepancies of description. Without noting the synonymy, we can sufficiently illustrate this portion of our subject by a few notes upon the *femoral region*. The division of the superficial fascia into two layers, the first fatty, the second membranous; the deep fasciæ with its pubic and iliac portions; the saphenous opening as an aperture in the fascia lata, are familiar to all. It is of the deep layer of the superficial fascia we will now speak. The English anatomists write of it in a general way, attributing to it none of the parts of interest in the anatomy of femoral hernia. Quain states that it unites with the superficial layer at the line of the groin—a fact we believe to be credited to Struther: the cribriform fascia pertains to the superficial layer. Hyrtl describes the deep layer as soon lost upon the ensheathing deep fascia. Sappey mentions a duplication of the femoral aponeurosis at the level of the "crural ring" (internal femoral ring, Henle), but gives no account of such, as complicating the ensheathing fascia of the limb. Henle describes the superficial layer, and we are inclined to accept his account as the most satisfactory, as a part in common with the general cellular envelope of the lower extremity. The so-called deep layer is in his judgment the superficial layer of the proper femoral fascia, which descends as an apron from the tendon of the external oblique muscle, from the anterior superior spinous process of the ilium, as well as from the internal extremity of the crural arch. Its function is to cover in certain structures, viz., the tensor vaginæ femoris muscle, the sartorius muscle and the vascular trunks in their sheath, all of which lie upon the deep femoral fascia covering muscles which pass to the thigh from the pelvis. The main points of connection of this apron of fascia are, first, where the tensor vaginæ is inserted into the deep fascia; secondly, where a process passes downward along the side of the tendon of the sartorius below the knee-joint; thirdly, where it unites with the deep

[1] Engravings of the Bones, Muscles, and Joints, 1816, p. 117, figs. 1 and 2.

[2] Gray and Holden, in stating that both crucials are relaxed in flexion and made tense in extension, are clearly in error. The latter (p. 482) makes the posterior crucial act as a check to limit flexion, *i. e.*, when relaxed! The truth is, the posterior limits extension, the anterior limits flexion and rotation of the tibia inward.

fascia to the inner side of the femoral vessels. The femoral canal is described as lying between the two layers of the femoral fascia and receives the vessels of the same name, the internal femoral ring is its point of exit from the pelvis; the external femoral ring is the saphenous opening. The cribriform fascia is referred to as a portion of the general superficial fascia lying over the outer ring.

The descriptions of the fasciæ about the *ankle-joint* are worthy of notice. Quain, following Henle, gives in addition to the internal and external ligaments, a transverse ligament above the joint and a crucial (Y-shaped) ligament below it. The latter possesses two fasiculi, one arising from the outer side of the calcaneum, defines a loop over the tendons of the extensor longus digitorum muscle to be inserted into the front part of the calcaneum; the second arises from the loop of this to pass inward to gain attachment to the inside of the foot. Sappey says that the anterior inferior branch of the Y- passes upon the tendon of the anterior tibial muscle and serves to fix it to the inner side of the tarsus. Its ascending branch appears as a prolongation of the initial portion, and forms with it a ribbon-like extension which constitutes the anterior annular ligament proper which holds the extensor tendons in position to the inferior extremity of the tibia. This description thus includes the transverse ligament of Henle and Quain. According to Cruveilhier the lower band instead of being inserted upon the inner side of the foot becomes continuous with the plantar aponeurosis. How different from this is the account of Holden! The transverse bands, according to this writer, consist of two straps which cross each other over the front of the ankle-like braces. One brace goes from the malleolus externus to the scaphoid and internal cuneiform bones, the other runs from the cuboid and os calcis upward and inward to the inner border of the tibia. That this part is not without value to the practitioner we learn that "it is the excessive strain of this ligament that occasions the pain in sprain of the ankle." Now the transverse ligament as described by Henle would not be subjected to strain in this accident.

Myology.—The popliteus muscle, the intercostal muscles, and the flexor brevis digitorum muscle have been selected as examples of the differences in description in this department.

The *popliteus muscle*, like many other parts in human anatomy, has been described in a conventional manner; few care to examine for themselves, either in the often neglected writings of the early anatomists, or the less frequently opened book of nature. The usual account gives it an origin over the outer condyle and an insertion into the triangular surface of the tibia above the posterior oblique line. Its connections with the posterior capsule in modern text-books prior to Henle receives no mention whatever; the fixation of the tendon of the muscle by bands extending both upward and downward therefrom are not alluded to, and its function that of a flexor and a rotator of the tibia inward the only one thought worthy of mention. Knox (note at p. 144, trans. of Cloquet) credits Winslow with the knowledge that the groove upon the outer side of the external condyle receives the tendon of the popliteus muscle only in flexion.[1] Quain (p. 286) accepts the correctness of this view, without acknowledging it as an interpolation to the text of the previous editions. In the same manner the present edition admits the posterior ligament of the joint as a source of origin, apparently from Henle (this is given in

[1] We have been unable to find in Douglas's trans. of Winslow any allusion to this fact.

Winslow's description, 1735, and is mentioned in the last edition of Cruveilhier and Sappey), though without allusion to that or other authority, while on p. 158 (fig. 140, B) a cut copied from Arnold is seen in which bands fix the tendons of the muscle above and behind to the external condyle, and below to the head of the fibula. Nothing in the description of the muscle (p. 285) would lead the student to suppose that the bands in question had an existence. With respect to the function of the muscle, we find that Goodsir[1] has left a posthumous note which is totally at variance with the accepted one. This writer asserts that "the muscle takes its *origin* from the tibia, and is inserted into the femur. Its opposite points of attachment are nearer one another in the extended than in the flexed condition of the limb. Hence the muscle acts as an extensor, and not as is usually related as a flexor muscle."

The function of the *intercostal muscles* has always been a source of controversy. We can refer the reader to Quain for a most admirable notice of this discussion. None equal to it appears in other writers, excepting perhaps the very full description and copious references of Sappey.

The observation made by Henle[2] that the ribs are moved in inspiration upward from about the sixth rib, and downward from below it, is one that we are already familiar with through the writings of Sibson. No other writer that we recall alludes to it.

The accounts of the *flexor brevis digitorum* are to be mentioned here. Sappey aptly remarks that "the short flexor of the thumb is of all the muscles the one whose existence is the most arbitrary." The English manner of dividing this muscle into two heads, a superficial and deep, finds no favour either with Cruveilhier, Sappey, or Henle. Hyrtl, on the other hand, gives substantially the same description as Quain. Cruveilhier excludes the deep head from the muscle and places it—under the name of the *trapezo-phalangeal* muscle—in the same natural division as the *adductor pollicis*. He strengthens his position by stating that both these muscles, as a rule, receive their nerves from a different source from the thenar muscles proper, viz., the deep palmar branch of the ulnar nerve. Henle considers the muscle under discussion as a small tractor placed between an internal and an external bundle of fibres, constituting respectively the abductor pollicis and the adductor pollicis. Each of the last-named muscles has relations to the sesamoid bone—bearing tendons, which our author in part identifies with the short flexor. Thus we have three methods of studying this muscle. An explanation of one of them would naturally suggest some mention of the others.

The nervous system.—But it is to the nervous system, particularly the encephalon, that we find the most interesting study. A description of Henle's taken from almost any portion of his Nervenlehre reads like a revelation to him who has derived his first impressions of the subject from the English school. The sections upon the medulla oblongata and the deep origins of the cranial nerves have been selected for the purpose of abridgment.[3] By way of illustrating the anatomy of the medulla we would refer to the topography of the floor of the fourth ventricle. This

[1] Anat. Mem., 1868, vol. i. (Appendix), p. 445.

[2] In copying the wood-cuts of Henle, the editors of Cruveilhier have evidently been not a little puzzled in their attempts to make the lettering of the electrotype agree with their own text. We have in fig. 417 (Myology) T. t. a. (*M. trans. thor. ant.* Henle) standing for "*triangular du sternum;*" and in fig. 429 (Ibid.) L. c. b. (M. lev. cost. brev., Henle) is the occult symbol for "*sur-costaux.*"

[3] It is quite inexplicable that the Nervenlehre, as far as it is completed, should have been issued without an index or table of contents.

is certainly an improvement upon our own. Especially is it noticeable that the lateral deverticulis from the floor toward the flocculus is well given. Our writers say that this cornu is placed between the cerebellum and the medulla. The defining layers for this purpose are the *velum medullæ inf.* and the *v. m. post.* The first is derived from the medulla, the latter from the cerebellum at the nodule, and both terminate upon the flocculus.

Figure 62 (Nervenlehre) gives one a different relation of the flocculus than is previously known to most students. The morphological value of the flocculus, together with the lobules, described by the same authority as the associated floccules, must be materially modified in the event of the relations above mentioned being sustained. It would appear, in a word, as though the flocculi were homologues of the lateral lobes of the cerebellum as seen in fishes.

The origin of the cranial nerves.—Luschka, we believe, is the first systematist who has had the courage to state in a work on human anatomy that which has long since been known by the comparative anatomist, that the olfactory and optic nerves are not of the same value as the remaining ten, but have distinct primary nuclei, corresponding to the first and second cerebral vesicles respectively. The remainder arise from the medulla. Aeby places the first and second cranial nerves under a special heading as the *N. cerebralis spurii*—and the remaining under a second which he calls the *N. cerebralis veri.* Why the nerves arising from the cerebral vesicles are not truly encephalic we cannot conceive. He denominates the first, second, and eighth pairs as the special sensory, the fifth, ninth and tenth as mixed—and the remainder as motor nerves. This arrangement at the present state of physiological knowledge is somewhat anomalous. It is from the region of the medulla that the deep origin of the cranial nerves must be sought for, and it is to Henle that the student must turn; for he will find here the most impartial consideration of the labours of others—the most elaborate wood-cut illustration of sections of nerve tissue, both of the natural size and magnified. Some of these present in a kind of harmonic succession different sections both longitudinal and transverse—of the region of the medulla from the nib of the calamus to the crura cerebri. Henle divides the medullar nerves into two groups, one containing the eighth, ninth, tenth, eleventh, and twelfth—the other, the seventh, sixth, fifth, fourth, and third pairs.

The *hypoglossal* arises from a well-defined collection of large multipolar cells, which lies to the side of the base of the central spinal canal and passes obliquely upward and forward to appear near the beginning of the floor of the fourth ventricle near the obex.[1]

The cranial roots of the *spinal accessory* nerve arise from the cortical gray substance behind the nucleus of the hypoglossal. It is here called by some the accessorial nucleus.

To the outer side of the hypoglossal nucleus lies the ala cinerea. This is exposed in common with the hypoglossal nucleus at the floor of the ventricle by the divergence of the posterior column. The eminence does not correspond to the real dimensions of the nerve tissue to which it owes its existence; for while the main portion of its bulk is due to the nucleus of the *pneumogastric nerve*, it is continuous posteriorly with a prolongation of the spinal accessorial nucleus, while it is narrowed anteriorly at the same time sinking from the floor of the ventricle. Immediately beneath

[1] This is a band described by continental authors flanking the inner border of the posterior pyramid.

the nucleus of the pneumogastric to the inner side of its concave inferior border, but not separated by any structural boundary, lies the nucleus of the *glosso-pharyngeal nerve*. The entire structure thus described is thought by Dean to be continuous with the processus reticularis of the spinal cord. It would thus appear, we venture to assert, that the ninth, tenth, and eleventh pairs of nerves of Sömmerring are distinguished from the eighth of Willis less happily than the seventh and eighth from the seventh of that author.

That the *auditory* is worthy of a separate position from the facial would appear from the following: The *nucleus of the auditory nerve* (superior acoustic nucleus) lies immediately beneath the transverse lines. An important accession of fibres joins the main root from a second *nucleus* (*inferior acoustic nucleus*) situated beneath the origin of the inferior cerebellar peduncle, while a third (*lateral acoustic nucleus*) is found upon the nerve as it passes through the root of the pons to its apparent origin. The superior root of the nerve just prior to its joining the root from the inferior nucleus is furnished with a ganglion which embraces the entire width of the fasciculus.

The *facial nerve* is placed within the second group of cranial nerves. Its nucleus is situated in the terete fasciculus immediately in advance of the superior root of the auditory nerve, at first occupying the entire breadth of the fasciculi then tapering toward the outer side.

The *abducens* would appear to arise from the inner border of the same fasciculus, no distinct nucleus being awarded it.

The *trifacial* arises from a nucleus composed of yellowish cells lodged in a fold between the roof and the floor of the fourth ventricle a little in advance of the facial. Luschka assigns its motor root to the *locus cæruleus*, which is made up of brownish cells.

The *patheticus*, in addition to arising from the roof of the fourth ventricle, has its more important connection with a nucleus (so called "*nucleus trochelari*") which is situated deep beneath and to the outer side of the passage between the third and fourth ventricles. It is continuous with the nucleus for the *oculo motor*. The nerve, indeed, has three roots, an inner transverse root, arising from the roof of the ventricle, an outer root which has a branch passing backward to the outer border of the *locus cæruleus*, and an anterior root which is continuous with the nucleus matter of the oculo-motor as already mentioned.

The nucleus of the *oculo-motor* is lodged within the *locus niger*, but is not identified with it.

The cerebrum.—Here the explanation of the *island of Reil* will delight the student. We remember hearing a distinguished anatomist remark that he was at one time almost prepared to doubt that the foramen of Sömmerring was to be found until his threatened lapse into incredulity was spared him by a timely dissection of an eye immediately after its excision for disease from the living subject. So may this lucid description of the famous island of Reil, which to most students is as mythical as the fabled Atlantis, prove opportune. We would refer particularly to p. 151, and figs. 93–95. It must be remembered that this cluster is the key to the plan of arrangement of the convolutions of the anterior and superior portions of the cerebrum. Also, that immediately within it lies the *lenticular* nucleus and the *claustrum*, the striated body: Holden has happily called the convolution of the island of Reil the lobe of this body.

The *hippocampus* is also tersely described; its relations to the great

inferior sulcus, and its bearings to the convolutions of the posterior lobe of the cerebrum, are clearly indicated.

The distribution of the nerves will now take our attention.

The volume of Henle, containing the account of these nerves, has not yet appeared. It is in Cruveilhier, on the whole, that we find the best account of the nerves. The beautiful illustrations of Hirschfeld have been very commonly employed in gracing the pages of both French and English books.

The hypoglossal nerve.—The recurrent branches of Luschka are not mentioned by other writers excepting Hyrtl. These are distributed to the diploæ of the occipital bone and to the walls of the internal jugular vein. Hyrtl believes these branches to take their origin from the pneumogastric. They are new, however, even to the anatomy of this nerve, and are deserving of notice. The spinal origin of the *descendens noni* branch as announced by Volkman and demonstrated by Luschka is generally conceded to be correct. Yet Cruveilhier makes no allusion to it. Sappey implies the spinal origin by anastomosis.

The glosso-pharyngeal nerve.—Cruveilhier and Sappey, who refer to it as being mentioned by Willis, to be revived by Comparetti, alone place importance upon an occasional plexiform arrangement of fibres derived from branches of the facial and glosso-pharyngeal nerves, above the concavity of the latter. Filaments from this plexus may go to the side of the tongue in lieu of the usual branches of the glosso-pharyngeal nerve. Hirschfeld figures this arrangement as the average plan. In the many copies of this plan nothing is said about the facial branches.

The *facial nerve*, as defined by the English and German writers, is without the lingual branch described originally, we believe, by Hirschfeld. In the late volume on the *Physiology of the Nervous System*, by Austin Flint, Jr., this branch is given.

The analogy between a spinal and a cranial nerve is well sustained in one instance only, viz., the fifth. But anatomists would do well to include in the text-books the suggestive identification of Bischoff that the intermediary nerve of the facial (nerve of Wrisberg) is the sensory branch of the facial, as well as the observations occasionally made that the hypoglossal in man has a ganglionic root. The reader has seen that the acoustic nerve, according to Henle, possesses a well-defined ganglion.

The *nerves of the extremities* are best described in Cruveilhier, not only with respect to the distribution of the branches, but also to the method of dividing a plexus, and to the grouping of branches themselves. The student cannot fail to appreciate the division of branches of a nerve into collateral and terminal; the naming, as far as possible, of each muscular and cutaneous branch separately, and the fixing of a uniform basis of description for each nerve. The most marked contrast between styles in this regard is seen between the German and English accounts of the musculo-spiral nerve, and of the anterior crural. It is noticeable that all the French authors say of the latter nerve that its cutaneous branches, answering to our *middle* and *cutaneous branches*, are called the "perforating," since they pass through the sartorius muscle (middle) and deep fascia (internal), while not only are these terms passed over by other writers, but the fact upon which they are based, viz., the perforation of the sartorius, is rarely mentioned in a prominent manner, and is oftener omitted. The origin of the *long saphenous nerve* is given by the English writers as arising from the superficial division of the trunk; the French,

when employing the divisions of superficial and deep set, universally place it among branches of the latter.

Our space will not permit an examination of the organs of sense, the vessels, or of the visceral cavities.

We have thus glanced at the labours of distinguished authors discriminatingly, we hope, rather than critically, with no carping spirit, but with deep reverence. We must acknowledge after such a survey that with the single exception of the rather abstruse and in other respects unsatisfactory work of Aeby, no elementary work on anatomy is favourable to obtain either a philosophical conception of the structure of man, nor a general idea of the intricacies of its detail. In seeking for the causes of this, we have concluded that it arises from the simple fact that while the human anatomist has pursued his studies with ardor, he has had to too great a degree no other motive for research than to learn the special conformation of the parts before him, so that the greater portion of his work, both monographic and systematic, has resulted in little less than a system of dissections. The text-book is too often a bundle of gleanings from the underlying record of special work, rather than a compendium of it.

Even with works designed to be something better than mere dissecting-room guides, the central idea appears to be to bring the observations of the anatomist in relation to the demands of practice rather than to the detection of truths not so subservient. This must of course depend upon the conceptions of "practice" entertained by authors, and we find almost always such conceptions are relevant to parts concerned in the larger operations of surgery—herniotomy, lithotomy, ligation, amputation, etc. Certainly, the demand of "practice" may be differently interpreted, and should mean much more. The best anatomy is that which touches at the highest point the scale of progress both in the practice of medicine and that of surgery. The practitioner's "applied anatomy" should not be, as of necessity it often is, a college reminiscence of a topography made interesting from the standpoint of capital operations, but a knowledge that he may carry with him in the performance of his daily duties. Judged by this standard, the latter anatomies have not fulfilled our expectations. The observant physician with a leaning to anatomical methods, who pursues his studies at the bedside, may often complement the scholastic anatomy of the lecture-room, and indeed may, in some instances, materially modify its conclusions. Sir A. Cooper in his studies of the deformities attending dislocations and fractures, contributed to our knowledge of the action of muscles. Duchenne,[1] by the aid of contractions induced by electrical currents upon the living body, has yet further improved upon our ideas of muscular action or revived forgotten opinions of the older writers. Hilton[2] in analyzing the sources and location of pain has developed laws in the distribution of nerves which no purist in systematic anatomy could in all probability have discovered. This list might easily be extended. While it is true that "la science pure précède toujours la science appliquée," is it not evident that facts such as these should make up in some measure the objects of teaching? H. A.

[1] Physiologie du Mouvements, 1867.

[2] On the Influence of Mech. and Phys. Rest, and the Diagnostic Value of Pain. London, 1863, 167. We find in a tabulation of Birkett in his translation of Von Behr (*supra*) p. 393, a hint leading to the conclusions arrived at by Hilton, that "the sensitive branches of a mixed nerve run to the part of the skin, which is moved by the muscles receiving motor filaments from the same trunk; so that the action of the muscle being known, we can, according to the law, even *à priori*, define the distribution of the sensory nerves to the skin."

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXII.—*Advance Sheets of the Tables of Mortality: being a portion of the forthcoming Volume on the Vital Statistics of the United States, Ninth Census*, 1870. 4to. pp. 425.

BETWEEN the leaves of this volume we find a circular from the Census office, stating that in the completed work will be included additional matter, and fuller details on certain points than are given in these advance sheets. The finished collection of vital statistics will embrace, together with what is now before us, explanatory remarks; tables of the blind, the deaf and dumb, the insane, the idiotic; birth tables; tables of age and sex of the living population; and comparative and percentage tables.

The present issue, fragmentary though it be, is sufficiently formidable of aspect. It contains 425 pages of large paper, pretty closely filled with finely printed tables, which appear to have been carefully revised. To disarm possible criticism the superintendent admits that the returns obtained by the census officers do not exhibit the "entire body of deaths occurring during the census year." "Whatever value," he adds, "the following tables possess is derived from the fact that they distribute nearly half a million deaths according to disease, age, sex, nativity, race, colour, and occupation, and month of death. The bearings of this subject will be fully discussed in the final publication."

In Table I. we have deaths, by States and Territories, with distinction of sex: 1870–1850. Here is given for the United States and for each component part, at the three epochs of 1850, 1860, and 1870, the population, the deaths, male and female (during the year, not decade), and the percentage of deaths to population.

There are two obvious ways of looking at this table. First, we may compare the nation or a State at one epoch with itself at another epoch. Second, we may, at a given epoch, compare one State with another, or with the country at large.

Comparing the three census years, 1850, 1860, and 1870, we find assigned to them respectively mortalities of 1.39, 1.25, and 1.28 per cent. of the population. Whether the considerable difference between the mortality of 1850 and the later periods is apparent only or real, we cannot judge. In some of the particular States or Territories we notice differences at the different times, which are slight, and presumptively due to local epidemics, severe winters, exceptionally hot summers, or to some other accidental cause. In other instances we perceive a regularly progressive decrease in the percentage; and this may be conjectured to be due to diminution of miasmatic disease, through extended clearing and improved drainage of new lands, or to some other of the many improving influences brought to bear, by an advancing culture and civilization, upon the public health. In a third class of cases, a low and increasing mortality is not truly indicative of diminished salubrity, but merely of the facts, that when society is very new, shifting and chaotic, as on our western

border, the death reports are very incomplete, and that, as in time the social order takes form and consistency, the returns become more correct and consequently larger.

In a fourth group of instances, in which we notice a sudden falling off of the death-rate, we fear the diminished figures may be due not so much to improved hygiene as to that demoralization in all branches of the public service which is liable to appear in a sullen and disappointed community.

As a few illustrations of a tolerably uniform mortality we may cite the following States, giving their percentages in the order of time, *i. e.*, 1850, 1860, and 1870: Maine, 1.30, 1.21, 1.23; Vermont, 1, 1.06, 1.07; New Hampshire, 1.33, 1.37, 1.35; Wisconsin, .95, .92, .94; Georgia, 1.10, 1.21, 1.15.

As possible illustrations of a real sanitary gain we may adduce: Rhode Island, 1.52, 1.42, 1.26; Ohio, 1.46, 1.06, 1.11; Michigan, 1.14, .99, .94; Indiana, 1.29, 1.14, 1.05; Iowa, 1.06, 1.08, .81: Few will doubt that in the following cases the apparent increase of mortality is owing to fuller returns obtained at the later periods: Oregon, .35, .57, .69; Dakota (1850 no returns), .08, .71; Minnesota, .48, .64, .80. A less marked and more regular increase in some of the older States may probably proceed from the same cause. Lastly, we may conceive the apparent diminution of death-rate in the following States to be due wholly or partly to that lack of zeal and fidelity on the part of officials, and that lack of cheerful co-operation on the part of the people, which have been so variously demonstrated in some of the Southern States: Mississippi, 1.44, 1.54, 1.11; North Carolina, 1.17, 1.27, .98; South Carolina, 1.20, 1.39, 1.05; Texas, 1.44, 1.55, 1.37; Kentucky, 1.53, 1.42, 1.09; Arkansas, 1.44, 2.03, 1.26.

Of course the different conditions and influences which we have noted, as capable of affecting and likely to affect the reported death-rate, may act in succession or even at once, upon the same State, corroborating or counteracting each other. Some indications of this may be perceived in the cases cited, and many more in those which we have not adduced.

The second method of viewing the table is the comparing of different States at the same period. Here we are liable to be seriously misled by the figures, unless we bear in mind the circumstances just alluded to as affecting their correctness. While not doubting that Idaho possesses a most salubrious climate, we do not believe that one-third of one per cent.—0.33 per cent.—fairly represents its mortality. Nevertheless, on noting the returns of States and Territories somewhat older and with well-established society, we cannot doubt the comparatively greater salubrity of the great northwest over the other portions of the nation. Especially do we thus believe when we find the returns not increased but diminished since 1860. Colorado, 0.94; Dakota, 0.71; Montana, 0.90; Wyoming, 0.81; all these may not be deemed conclusive, because, like Idaho, they are young and, perhaps, still somewhat chaotic communities; and have no previous returns as terms of comparison. But when we see Michigan reaching, by successive reductions, 0.94; Iowa, 0.81, also less than before; Wisconsin, 0.94, having scarcely varied during three censuses; Nebraska, 0.81, after 1.32 in 1860; and when we notice Minnesota, reaching only 0.80 by a very gradual increase from 1850; with Oregon, 0.69 after a similar progress, we are disposed to admit the plausibility at least of the claim to peculiar salubrity put forth by the people of these regions. Moreover, if we are correct in the explanation previously given of the low percentage presented by some of the Southern States, the mortality of these, and consequently of the nation, should be stated higher, thus still further heightening

the relief in which the favoured regions stand. We will briefly state the percentage of mortality in some of the less favoured States, omitting some that have been mentioned as probably underrated. Louisiana, 2; Virginia, 1.24; Missouri, 1.63; Maine, 1.23; Massachusetts, 1.77; Connecticut, 1.26; New York, 1.58; Pennsylvania, 1.49; New Hampshire, 1.35; Illinois, 1.33.

In the *British Medical Journal* for August 31, 1872, we find it stated that in Europe generally the yearly death-rate is one in forty-three, or 2.32 per cent.; while in England it is one in forty-six, or 2.17; and in France one in thirty-two, or 3.12. The grounds for these statements are not given; the character of the *Journal*, however, would seem to warrant their authenticity. How much of the enormous discrepancy between our country and Europe is real, and to be accounted for by the many influences, physical and moral, that affect the duration of human life, and how much of it is due to imperfection in our statistics, forms a very curious and important question. Whatever may be the fact with regard to some of our States, we feel reasonably certain that in Massachusetts, and probably some others of our older, smaller, and more enlightened States, the returns obtained by the census officers are very nearly correct. Even supposing the Massachusetts percentage of 1.77 to be amended to 2, we should find a margin in her favour as compared to Europe. Two per cent., however, is an excessive estimate. The municipal mortality reports of Providence, R. I., have been made with the greatest possible care, for years past, by medical men, appointed because of known fitness for the work. The city has a very large foreign population employed in its factories. It had no water supply, except from wells subject to sewage filtration. Yet its mortality has been considerably less than that of England, as above quoted.

Of course it is not to be forgotten that some local epidemics may have swelled the percentage of certain places and periods, causing an apparent increase, or preventing a decrease which might otherwise have been expected.

Out of the whole 492,263, dying in 1870, 260,673 were males and 231,590 females. Not having at hand the population divided according to sex, we cannot say how closely the deaths correspond to numbers living of the two sexes. At previous censuses, however, the male population has exceeded the female in a somewhat smaller ratio. The comparative, and even absolute, excess of female deaths in some few of the oldest States, corresponds with the known fact that from various causes the male population has for years been falling towards, and even beyond, equality with the female.

Table II. gives for the nation, and each part thereof, the ages of the recorded deaths under each sex. A column is assigned to each year of age up to five, after which the periods are five years. Here we learn that two-fifths of our dead are children under five years of age. More than half of these—one-fifth to one-quarter of all dying—are infants under one year. Passing to the other extreme, about one decedent in twelve had passed threescore years and ten. We cannot detect any influence connected with sex as affecting mortality in infancy. At the period of puberty there begins to be a very decided preponderance of females over males in the death-lists. The absolute returns, in the column 15 to 20, stand, males 9521, females 10,741; at the next lustre, 12,539 and 13,449; from 25 to 30, 10,736 and 11,786; from 30 to 35, males 9456, females 10,072. In the next lustre a small absolute preponderance appears in the opposite direction, which is greatly increased in the following period. As illustrating the movement of the mortality, we may observe that on the male side the columns respectively headed 40 to 45, 45 to 50, 50 to 55, contain figures equal almost to units; while, on the female side, the two latter

columns contain sums about 1700 smaller than the first. From 55 to 60 nearly one-third less women die than men. In the next lustre the disproportion slightly lessens, while the absolute numbers on both sides increase some 1200 to 1400. The 65 to 70 column shows slightly diminished numbers, though still higher than 55 to 60. Passing to the next column we see a decrease of 300 men and an increase of 450 women. In the two periods next following we find at last the proportionate equality between the sexes again restored. In the deaths over 85 we find women considerably in excess.

To illustrate, if not account for, the curious variations above noted, we may state the matter thus: In infancy and childhood the sexes are on an equal footing. At puberty woman becomes peculiarly prone to grave disease. Her increased mortality, possibly because of first child-bearing and the novel trials and dangers of married life, continues till she is 35 or 40, though greatest between 20 and 25. The considerable fall at the 40 to 45 period may mark the recovery or survival of the constitution from the first shock of maternity. Indeed, in both sexes this period is perhaps not far from the natural climax of health and vigour. A fall of 20 per cent. marks the next lustre, while the rate is little changed from 50 to 55. The next period shows another fall of 20 per cent., indicating the continuance of health in a large proportion of the women who escaped the dangers of child-bearing. A large increase marks the 60 to 65 column; the diseases that so often follow upon the change of life are at work. The decrease at 65 to 70, followed by an equal increase at 70 to 75, we cannot explain. From this epoch the numbers steadily decrease.

In like manner we may notice the signification of the varying mortality in the different lustres of the sterner sex. Puberty is for man a less fatal epoch than for his sister. Nevertheless his mortality rises, from the 10 to 15 to the 15 to 20 period, about 15 per cent. During the next five years occurs a rise of 30 per cent. The seeds of hereditary disease, quickened by puberty, have produced their fruits. Through the two succeeding periods is a gradual fall, followed at 35 to 40 by a rise of 8 per cent. The 40 to 45 column shows the figures just about as before the rise. This mortality, remaining unchanged for ten years after, may be regarded as representing the strength of fully developed and unimpaired manhood. 55 to 60 and 60 to 65 witness the same fall followed by a rise that puzzled us in the other sex. After 65 the decrease is steady to the end, without the rise at 70 to 75 noticed in the other case.

It may be asked whether these totals, at different ages, with their curious progressions and exceptions, are borne out by the different items of which they profess to be composed. On carefully examining several States we find a close correspondence with the totals; and adding a few specimen columns find them correct.

Table III. in form resembles II.; but divides the mortality among the months of the year, instead of among the ages. A great difference is found to exist between the mortality belonging to the different months. This appears to be about the same in the two sexes. January shows 40,633 deaths. February, brief as it is, exhibits a slight increase. In March we have 49,712, being the highest number. April shows a diminution greater than is warranted by its shortness merely, while May rises to within 1200 of March. June shows an immense falling off, its figures being 33,114. In July the mortality suddenly leaps to 41,273. August raises the figures to 46,224. In September we have 42,001; October 36,651; November 32,404, and December 34,825. Thus we have, as it were, two sickly and two healthy points in the year—March and July or August, and June and November. Of course, States representing the

extremities of climate differ considerably from each other and from the average. Where malarious disease is very rife a high mortality continues far into the fall. May takes the place of March, too, in many Southern States, as the culminating point of the spring mortality. In a number of the Northern States the summer or fall mortality reaches a higher point than that of March. In Massachusetts and in Illinois, August and September are the most fatal months of the year.

Table IV. shows the race and nationality of the 492,263 persons dying in 1870. To 356,771 whites born in this country are to be added 67,461 coloured; and 65,963 decedents born in foreign lands. About 2000 of Indians, children of Chinese parents, and "unknown," make up the grand total. Of foreign birth there were, from Ireland, 27,053; Germany 18,626; and Great Britain 8922.

Table V., covering nearly 200 pages, exhibits, for the nation and for each of its divisions, the mortality as to age and sex, as in Table II., together with the diseases causing death.

It may be not unprofitable to present the figures representing deaths by certain prominent maladies. If preference is shown to zymotic diseases it is because there is less liability to error in the reports. Smallpox, 4507; measles, 9237; scarlet fever, 20,320; of which some 13,500 were under five years old, and 33 over 60 years. The *proportionate* mortality, in the two diseases last named, is a trifle greater among females. In diphtheria, 6303, males, 3078, females, 3225, the disparity is more marked. Hooping-cough, 9008, has 3987 males to 5021 females. Enteric fever, 22,187, being divided between the sexes in almost exact proportion to the total deaths of each. Passing to other forms of disease we find deaths by rheumatism number 2912, of which 1670 were males. Gout is credited with but 43 in all. Cancer, uterine, 510 (3 under five years of age); mammary, 630 (2 under five); other localities, 5084 (203 under five), of which 2815 were females. Consumption presents the appalling record of 69,896 deaths, of which 35,925 were females. Diabetes, males, 616; females, 221. "Dropsy," 7856. Encephalitis, males, 7579; females, 6122. Meningitis, 1843 and 1491. Apoplexy, 2982 and 2244. Hydrocephalus, 2302 and 1739, nine-tenths nearly being under five. Nearly two-thirds of the number dying from the inflammations of brain and membranes are also under five. Paralysis, 7501; males, 3842. Tetanus, 1626; males, 1052. Epilepsy, 1414. Convulsions, 12,751; males, 6989. Under this last heading we find 11,321 under five. The remaining 1430 (a thousand over ten years) are distributed pretty evenly through all the lustres up to extreme old age; on the other hand, under epilepsy are given 366 under five years; if a distinction is to be maintained, it seems probable that these numbers should be transferred, each to the other heading.

Of the "circulatory system" group, with its total of 17,034, 13,794 are in the unsatisfactory subdivision of "other diseases of this group." Nothing could better show the difficulties encountered than this one item.

Pneumonia is charged with over 40,000 deaths, of which 22,358 are males, and 17,654 females. Bronchitis, 4049; one-third being infants under one year. Croup, males, 5802; females, 4890.

Dysentery proved fatal to 7912 persons, 5005 under five years old. Diarrhœa, 14,195, 9456 under five. Cholera infantum, 20,255; under one year, 13,375; between one and two, 4924; between two and three, 1188.

Of the 4400 women dying in childbirth, two were over 65 years of age, and two more over 60. We should be thankful, were we able, to believe that 188

comes anywhere near the truth in representing the deaths from abortion. Still-born infants number, males, 5282; females, 3778.

Burns and scalds are accountable for the death of 1962 females and 1429 men. It would be interesting to know how many of these were caused by kerosene. Lightning, 202. Drowning, males, 3514; females, 561. Homicide, men, 1907; women, 150. Suicide among men is chiefly by hanging, 304, against gunshot, 237, and other forms, 519. With women poison occupies the first place, and hanging second—75 and 66; other forms, 144. Execution was the fate of no woman in the whole land during 1870, while it befell 31 men.

The total of violent, accidental, and suicidal deaths is 17,517 males and 5223 females.

We have neither space nor inclination to continue this sort of examination through each State and Territory of the forty-four embraced in this table.

The first glance, however, over the different States reveals a remarkable diversity as to the prevalence of measles and scarlatina.

Alabama, population 996,992, presents a mortality, by measles, of 403, and scarlet fever only 13; Arkansas, 484,471, measles, 204, scarlet fever, 16. Georgia, 1,184,109, measles, 270, scarlet fever, 12; Kentucky, 1,321,011, measles, 249, scarlet fever, 80; Tennessee, 1,258,520, measles, 335, scarlet fever, 29; Louisiana, 726,915, measles, 375, scarlet fever, 68; Mississippi, North and South Carolina, Virginia and Texas, exhibit a similar record. Now we will name another list of States in which this proportion is reversed or nearly so. Connecticut, population 537,454, measles, 30, scarlet fever, 286; Illinois, 2,539,891, measles, 702, scarlet fever, 2162; Maine, 626,915, measles, 66, scarlet fever, 422; Massachusetts, 1,457,351, measles, 291, scarlet fever, 911; Minnesota, 439,706, measles, 97, scarlet fever, 278; New Jersey, 906,096, measles, 166, scarlet fever, 781; New York, 4,382,759, measles, 1073, scarlet fever, 3403; Pennsylvania, 3,521,791, measles, 554, scarlet fever, 5645; Wisconsin, 1,054,670, measles, 152, scarlet fever, 1016; California, 560,247, measles, 39, scarlet fever, 226. There may be brought together, also, a group of States wherein the two diseases are more nearly equal, as Delaware, District of Columbia, Indiana, Maryland, Michigan, in which scarlatina leads, not exceeding two to one; and the great States of Missouri, Ohio, and Iowa, in which the figures are still more nearly equal.

Pneumonia, as here reported, seems to be more prevalent in the Southern than in the Northern States.

Cholera infantum is found credited with a large mortality in all States which contain great cities. Apart from this circumstance the disease does not seem to be much influenced by climate.

Florida, if we may trust the aspect of its mortality tables, should be an especially salubrious climate for children. With a population of 187,748, the deaths are, by measles, only 23; scarlatina, 10; diphtheria, 8; hooping-cough, 7; croup, 49.

The excessive mortality attributed to pneumonia in some States is often accompanied by a suspiciously low death-rate from consumption. Without stating in detail the results of an examination of the State reports with respect to these diseases, we are disposed to venture a conjecture that the rapid inflammatory form of phthisis may be especially prevalent in those States. Or possibly severe congestion of the lungs may often be the fatal termination of malarial disease. Both these modes of death might be attributed to pneumonia. The Northern States generally exhibit consumption and pneumonia as mortal in the ratio of two to one or five to two; while the extreme Southern and South-

western States reverse the proportion. Possibly, however, a portion of the difference may be due to a real diminution of phthisis as we go south, rather than to increased pneumonia or erroneous diagnosis.

Curious and suggestive as some of the figures we have presented are, even in their gross shape, the same statistics will become immensely more available when, in subsequent publications, they shall be reduced to percentages upon the total deaths, the total population, and the population of certain ages. We shall then be possessed of materials for the most profound research into the laws of disease. Especially may we expect to gain much additional knowledge concerning the conditions affecting the various zymotic diseases.

Table VI. is like its predecessor, save that the deaths by all the diseases are divided among the twelve months instead of among the different ages. We can barely glance at that portion which gives the figures for the entire country. Smallpox, out of a mortality of 4507, shows 3287 occurring in the first five, and the last month. Scarlatina has its highest mortality in March, 2726, and lowest in September, 927; the first four months of the year furnishing one-half the deaths. Measles, while having its actual maximum in March, is little less during the next two months, and quite gradually reaches its minimum in November. Diphtheria, though more evenly distributed than either of the two maladies just named, yet exhibits a marked excess of deaths in the autumn months with December and January. Enteric fever, with a decided minimum in June, 1152, and a maximum in September, 2767, is yet largely fatal in every month. Hooping-cough has its highest mortality in March, April, May, and August, reaching nine or ten hundred, and its lowest in November, less than five hundred.

Pneumonia recedes from a maximum of 6393 in March, to 1356 in July. This very rapid tumble is followed by a regular rise, which slow at first becomes much more rapid during the winter.

Apoplexy shows a marked excess in March, April, and May.

Dysentery has more than half its 8000 deaths in August, September, and July, naming these in order of mortality. Cholera Infantum, beginning the year with 502 victims in January, increases but slowly through the spring, until May presents a decided increase, reaching 1203; then follow June, 1954, July, 4354; August, 5187; September, 2968; October, 1331; November, 504; December, 478. We hardly need to remark that many cases are probably here tabulated which would be excluded by a strictly accurate diagnosis.

Table VII. exhibits the same deaths by the same classified diseases, but divided in this case according to race and nativity of the decedents. Like the others, it gives the figures first for the United States and then for each State.

In the light of this table we will recur to the remarkable relations, which we have already exhibited, between measles and scarlatina in different States. While in the entire country the mortality by the latter is double the former, yet in certain States the ratio is inverted and often vastly increased, reaching in the Gulf States and Askansas ten, twenty, even thirty to one. Passing only from Arkansas to Missouri, the relations change from measles 204, and scarlatina 16, to measles 869, and scarlatina 1049. The difference is not due to position as seaboard or inland. Latitude may have much to do with it; but latitude is not everything. One fact we are inclined to think has a causal relation,—wherever there are great cities scarlatina is prevalent. Where these do not exist we have generally a large excess of measles. But this table gives us a new and most important light. The total deaths of the coloured to the white

race born in the United States, are as one to five.[1] The deaths by measles are as one to three and a quarter, coloured to white: those by scarlatina, one to sixty-six! In other words, taking even numbers of decedents of the two races, twenty black shall die of measles to thirteen whites; and five blacks to sixty-six whites of scarlatina. In those Southern States wherein we have found measles so predominant, we find by carefully examining this race-table that in proportion to coloured and white population, the deaths by measles are twice as numerous in the blacks. In some of the late slave States more than one-half the population is coloured. The striking difference which we have just exhibited between Arkansas and Missouri is largely due to the fact that the population of the former is one-quarter, and of the latter one-fourteenth, coloured. Add to this consideration a great city in the latter, and the facts are accounted for. Apart from the predominance of measles, there remains an absolute smallness in the reported deaths by scarlatina in some States, to be explained by other conditions than those of race. The absence of great cities does not quite suffice; we must also suppose that scarlatina is not at home in a southern climate.

Intermittent fever appears to be fully as deadly, and remittent considerably more so, to the coloured man than to the white native.

From fatal diphtheria the coloured race appears to enjoy partial exemption, showing a proportionate mortality less than half as large as the white. Erysipelas seems to be only one-fourth as mortal among the blacks. Coloured mortality from consumption is no greater, if as great as the white. By the diseases of the "nervous" group, the coloured race has a less mortality in the ratio of five to seven. About the same may be said concerning the "circulatory" group. In the "respiratory" group (which excludes consumption), we find about an equal disparity in the other direction.

Cholera infantum is only about half as fatal to the coloured race as to the white. This disparity, however, may be wholly due to the smaller proportion of the former living in cities.

We have never heard that coloured people were peculiarly afflicted with "worms." Yet their mortality from that cause appears to be five times as great as that of white folks.

It is rather curious to note that by burns and scalds the blacks die in more than double their proper proportion; while by suffocation six die to one white. Is this due to coal-gas, and the desire of this race to keep warm? By homicide the black man suffers twice his share of mortality. His exemption from suicide is singularly complete. Out of the whole 850 suicides of persons born in America, only 18 were coloured. Decedents of foreign birth, nearly equal in numbers, furnish almost five hundred self-murders.

Much matter of interest may be found by comparing the fatal diseases of the foreign-born with those of natives; but this we must omit.

Table VIII. classifies the decedents by occupation, giving not the particular disease, but the group to which the cause of death belongs. This possesses no interest till we know the relative number living in each pursuit.

Table IX. is a *résumé*, giving the age of death of all white, coloured, Chinese, and Indian decedents, dying in 1870.

We have now reached the end of our very hasty, very imperfect, very long,

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[1] For several reasons not necessary to be here specified, we have in this and the following pages compared the coloured people not with the entire white population, but with those native-born. The total deaths of foreign-born population are a little less than those of the coloured people.

and we fear very tiresome glance over these important statistics. The range of investigation pursued by the census office seems to grow wider with each decade. We believe too there is some improvement in the information returned to the Bureau. There certainly is in its tabulation and publication. Some of the work printed in former years has been disgracefully and absurdly incorrect. We noticed only one palpable error in this book. On page 188 the lines belonging to smallpox, measles, and scarlet fever, have got interchanged.

With all the zeal, skill, fidelity, and industry which we believe now to exist in the Census Bureau, the results attained can never be entirely what they should be until an utterly different system shall be adopted in the original collection of facts. Regular, systematic registration, must replace the Paul Pry-ing of the politically appointed official. B. L. R.

ART. XXIII.—*Hysterology: A Treatise, descriptive and clinical, on the Diseases and the Displacements of the Uterus.* By EDWIN NESBIT CHAPMAN, M.A., M.D., late Professor of Obstetrics, Diseases of Women and Children, and Clinical Midwifery in the Long Island College Hospital. 8vo. pp. xiv., 504. New York: William Wood & Co., 1872.

IN reference to the title chosen, the author remarks in his Preface: "I have ventured to coin a new word as a more distinctive title of a monograph on uterine disease than *Gynœcology*, that, embracing all the diseases peculiar to the female, is too broad in its signification." And he states:—

"My purpose, a humble one, is simply the delineation, from personal observation, of the histories, symptoms, pathology, and treatment of the special disorders of the non-gravid uterus." (p. 1.)

Referring to the *benign* affections of the uterus, the author remarks:—

"Observing the marked, though temporary, relief attendant upon a single scarification of the labia uteri, I began to suspect that the changes in the cervix, discovered by the use of the speculum, were secondary to some pre-existing condition, and that a permanent cure could not be attained until this should be removed. Disabusing my mind, as far as possible, of the opinions I had acquired of others, or formed of myself, and resolving to begin *de novo*, as though nothing were known on the subject, I attempted by the empirical trial of various plans of procedure, to discover the one the best suited to each special condition. Gradually and imperceptibly, after an unremitting and pains-taking application extending over many months, a new light broke in upon the obscurity enveloping these diseases; doubt and uncertainty gave place to confidence and precision; discouragement and distrust to expectation and reliance; and now, having given two to three hours daily, for more than seven years, to these practical investigations, I am emboldened to assert most positively that no class of disorders is more readily diagnosed, none more certainly removed, and none is more free from liability to a relapse, than the one of which it is my purpose to treat in the following pages." (p. 9.)

We have preferred to quote the author's own language, to show the position of independence which he assumes throughout his work. He has thrown down the gauntlet to many writers and observers of large experience, and will no doubt have to defend his position in future.

In the chapter on "Symptoms and Examinations," after commending the left lateral decubitus, or English method, as more delicate and giving greater freedom to the operator than the French, or dorsal, he recommends the erect

facing posture of the latter, which is even more indelicate, and certainly not in any way more convenient, than the examination made from behind the patient. In making such explorations in cases of expected prolapsus, we have been in the habit of placing the woman in a stooping position before a bureau, with her hands resting upon it, her extremities widely separated, and introducing the index-finger as in the left lateral decubitus, kneeling behind the patient, but never "*facing*" her.

Dr. Chapman is evidently no friend to the stem-pessary, of which he remarks:—

"Appliances like these might merit approval, and answer the indications, were the internal genitalia an inanimate mechanism, the various parts of which could without hazard or detriment be probed, pierced, propped up, and fixed in place by steel rods." (p. 30.)

Of the use of the sound, he says: "Rarely in benign disease, is it necessary to pass the sound through the inner os, or explore with it the proper uterine cavity."

He does not give a great deal of credit to his medical brethren, in the following language, upon what they are to find with the speculum:—

"If the mind of the physician be preoccupied with the doctrines of Bennet' he will invariably discover the unmistakable evidences of chronic inflammation, ulceration, induration, and hypertrophy, structural changes requiring the most destructive agents for their removal; if by those of Robert Lee, he will, by the closest scrutiny, discover nothing but a slight abrasion of the epithelium, or a mild catarrh of the mucous membrane, conditions as trivial in import and common in occurrence as like states of the Schneiderian membrane, and as easily rectified by general remedies." (p. 37.)

He recommends the physician to "take the true standpoint, and employ his eyes as in studying other objects." Instead of the heading, "*True Standpoint for the Physician*," he should have had it "Eyes and no Eyes, or the Art of Seeing."

In the chapter on Pathology and Ætiology, the author opposes the ovarian theory of Tilt; the teachings of Bennet, that the cervix is liable to inflammation, induration, hypertrophy, and ulceration; the doctrine of Prof. Charles D. Meigs, "that prolapse of the uterus is the fruitful parent of the numerous progeny of ills to which the female is subjected, and exists in seventy-five per cent. at least of all uterine cases;" and the opinions of Scanzoni, that uterine disease consists in an inflammatory affection, producing hypertrophy of the uterus proper, or its lining membrane, a secretion of mucus and pus, erosion of the mucous membrane of the os, advancing to ulceration, destruction of tissue, and production of fungous granulations; but commends those of Tyler Smith, whose observations he characterizes as "the most invaluable contribution ever made to Hysterology."

The author advances the opinion that the uterus is in a state of congestion, and not inflammation, as "proven by the puffy and elastic feel of the neck, by its slight increase in temperature, by the trivial pain caused by an examination, and by the augmented bulk of the uterus." (p. 61.) He further states in proof (p. 88), that rapid cures are effected by local loss of blood, spontaneous or artificial, etc.; and that the cervical glands secrete albumen, and never pus.

Under the head of "Congestion of the Inner Cervix," eighty-one cases are recorded, seventy of them in a very condensed form; the local treatment consisting for the most part of scarifications of the cervix, and the application of a 40 grain solution of nitrate of silver to its cavity. These were supplemented

by tonics, iron, astringent injections, etc., as the peculiarities of each case appeared to require.

Under Class II., Multiparæ, "Congestion of the Inner and Outer Cervix," we find the records of 177 cases, with various complications and accompanying peculiarities, embracing, according to the author, the majority of all the cases falling under the eye of the hysterologist. He thus describes the appearances commonly observed through the speculum:—

"The os is more open than natural, and gives exit to a free albuminous secretion, but the cervix presents various appearances. It may be either œdematous and glistening, and have a pale rose-colour, with or without a bright arterial injection of the labia, or be distorted by the enlargement and elongation of one or both lips, and have a deep vermilion circle around, and a bluish-purple hue beyond the uterine mouth. On its surface, red points are occasionally seen, which, scattered here and there, and either distinct, or run together in a uniform blush, are the apices of papillæ; and, at times, though unfrequently, at these points minute vesicles are formed that are due to the intense underlying congestion raising the epithelium by a serous effusion. As these vesicles are herpetic in nature, their contents in this as in other localities change from a watery to a milky fluid." (p. 144.)

The local treatment employed was, as a general rule, similar to that under the former class, viz., depletion by scarification, and occasionally by leeches, and the application of the nitrate of silver, either in solution, or, in cases of marked erosion, in the solid stick.

"Congestion of the Uterus." To the morbid changes before noticed, the author adds those which mainly arise from the enlargement of the organ, and its "more extensive range of sympathetic irradiations, and a more profound implication of the ganglionic and spinal nerves as shown by the greater severity and obstinacy of all the disorders hitherto observed in uterine disease." The prominent local disturbances given are pain and tenderness above the pubes, a sensation of weight in the pelvis, with pressure upon the bladder, difficulty of retention of urine, and anteversion of the uterus, followed not unfrequently by prolapsus, even to an extensive degree.

Under this class 68 clinical cases are reported, being much less uniform in character than those belonging to the previous classifications. The following is Dr. Chapman's theory with regard to uterine hypertrophy at the period of change of life.

"The hyperæmia of the uterus" [speaking of the case of a woman of 56] "was, in this instance, due to the sudden cessation of the menses at the change of life; whereas the decline of this function ought to be gradual, so that nature may be allowed time to accommodate herself to this radical revolution in the system. The climacteric period is not unusually marked by menorrhagia, which removes by a natural effort the congestion occasioned by the insufficiency or absence of the catamenia. Should, however, relief be not thus attained, it ought to be sought by artificial appliances, since the fulness of the uterine vessels predisposes to morbid growths and malignant diseases that often take their rise at this age. (p. 214.)

We have never known a patient more free from uterine maladies during her life, than one now 78 years of age, who was perfectly regular up to a certain period, when her menses ceased, and forever, without any hemorrhagic or other change to mark the event.

Another cause for uterine congestion is given in a subdivision headed "*From non-involution.*"

"Almost invariably the cases falling under this head date from a labour or a miscarriage, and arise from a check to the normal process, that, instituted on

the discharge of the uterine contents, whatever the stage of the development, melts down and removes the newly formed tissues, which, adventitious and temporary in their purpose, have now become useless and effete. This process, termed *involution*, is retrograde and spoliative in its nature, and, when perfected, restores the womb to its normal non-pregnant state, but, when interrupted or materially interfered with, leaves it nearly as large as at the time of delivery—the venous canals being surcharged, the muscular tissue spongy, the capillary circulation sluggish, and the venous power defective." (p. 231.)

A third cause enumerated is, "*mechanical obstruction*," in prolapsus, and particularly procidentia uteri, when the organ becomes enlarged by pressure upon its veins, in some instances to three or four times its normal size. In this case, a replacement will often in time restore the uterus to its natural dimensions. As a means of mechanical support, Dr. Chapman gives his preference to the silver-coated globe pessary.

As in the former classes, the author treats uterine congestion by topical depletion, and the application of nitrate of silver; with the internal use of fluid ext. ergotæ, or tinct. ferri chlor.; or the local application of ferri persulph., where menorrhagia is a prominent accompaniment.

In Class V. "Congestion of Cervix and Vagina" is more minutely defined as "Congestion of the cervical canal, congested circle around the os uteri, with or without the loss of epithelium, congestion and enlargement of the neck, congestion of the erectile coat of the vagina, mucous inflammation of the vagina, and slight congestion of the corpus uteri and ovaries. Peculiarities—vaginismus, vascular tumour, vaginitis."

The uterus and vagina are so intimately connected through their nerve structure, that congestion of the former frequently leads to disease in the latter, the vaginal affection being secondary, and dependent upon the uterine: hence the plan of treatment proposed by Dr. Chapman, which is mainly depletive and addressed to the uterus. He says of one case:—

"As in this case, so in all others of a similar character, it is found that a loss of blood from the cervix depletes the vascular network of the vagina, equally with the uterine veins, and that a vaginitis, arising as a sequel of uterine congestion, is subdued by restoring the uterus to its normal condition. If, on the contrary, a vaginitis be primary, or due to inflammation of the rectum or bladder, the loss of blood from the cervix will be of little or no avail." (p. 264.)

Twenty cases of a more or less complicated character have been reported under this class, the chief reliances being local depletion, nitrate of silver, injections of borax, laxatives, chalybeates, and bitter tonics, as before. A case of cystitis with slight congestion of the cervix was treated with the same form of depletion, to "the immediate relief of the urinary disorder," saline laxatives and pills of gum turpentine being at the same time administered.

Class VI. same as Class V., with ovarian complication.

"The congestion gaining increment and force by the greater extent of structure involved, and likewise by that mutual reaction always taking place between two or more suffering organs that conspire to a common fuction, the grade of nervous excitement becomes higher, and the intensity of vascular engorgement greater than in the simpler forms of disease already investigated. This point being reached, the congestion advances still further, and attains its extreme limits by involving the ovaries and the true uterine mucous membrane equally with the uterine muscular tissue and the vaginal envelopes, and also by rendering all these organs a common centre of an excited arterial determination." (p. 287.)

"Congestion of the cervical cavity represents the minimum, and that of the uterus, vagina, ovaries, and true uterine mucous membrane, the maximum of womb-disease, each intermediate stage retaining the characteristics of the pre-

ceding, and approximating in nature to the next higher, until at last morbid action attacks every organ of the reproductive system, reaches its height, and displays itself in completeness as a totality." (p. 288.)

The author draws a distinction between the relative influences of congestion of the cervix, and body of the uterus, upon the ovaries, claiming that in the former the reaction is imperfect, comparing it with the sympathy that unites the stomach and small intestines; whilst in the latter, owing to more intimate vascular and nervous connections, the ovaries become much more decidedly and directly involved in disease. He does not believe that the pain and tenderness so often experienced in the iliac fossæ arise from congestion of the ovaries but from a supersensitive state of the uterine nerves, which is succeeded by a higher grade of neuralgia as the disease advances. True ovarian congestion may ultimately result, but its grade is much lower than when it arises suddenly, in common with the uterine, as a result of menstrual suppression from external causes.

Speaking of the touch per rectum in suspected ovaritis, Dr. Chapman remarks, that the enlarged ovaries believed to have been felt by examiners, were probably in most instances nodulated masses of lymph, resulting as a deposit from the general congestive condition which accompanies that of the ovaries.

Of uterine flexion the author writes:—

"A flexion previous to puberty will give rise to no symptoms, nor after this age, if, as is commonly the case, the menstrual flow be unimpeded; a fact explaining the slender knowledge of many members of the profession as to this variety of uterine deviation." . . . "Many, if not most cases, are congenital, originating during the period of fœtal development from a defective or perverted cell-life; but others are accidental, being acquired during the menstrual reign from the involution after a labour or an abortion, or the sub-involution after the cure of a congestive enlargement of the uterus, proceeding too far in its destructive disintegration." . . . "Therefore a flexure when congenital is a malformation, but when accidental is a change of form from fatty degeneration, that, weakening the muscular walls in a circumscribed locality, causes the corpus, from want of support, to bend in that direction." (p. 307.)

Dr. Chapman regards flexures of the uterus as in themselves of very little importance, but becoming such, as the cause of menstrual obstruction, and subsequently of uterine congestion with its accompanying ills.

The clinical reports under the head of "Congestion of the Uterus, Ovaries, and Vagina," number 47. As an evidence of the complex character of some of these cases which are marked *cured*, witness the heading of Case 318, "Congestion of uterus, ovaries, and vagina; hypertrophy; hyperæsthesia; erosion; menorrhagia; dysmenorrhœa; epilepsy; intercostal neuralgia; angina pectoris; asthma; aphonia; laryngismus." (p. 334.)

The author appears to base his congestive theory, as opposed to the existence of inflammation, upon two points: the prompt effect of depletion, and the absence of the usual secondary results of inflammatory action as witnessed in other organs than those belonging to the generative system, viz., the production of pus, the destruction of tissue, and the formation of adhesions. In commenting upon the results in Cases 113 and 114 he writes:—

"This case (cxiii.), like most others in this class, refutes conclusively the doctrine that womb-disease is of an inflammatory nature, or has any analogy, even the most remote, to the morbid states of other organs of the body. Beyond a doubt, a congestion of the intensity here seen, one so active and violent that it seemed to have overleaped the bounds of a simple fulness of the blood-vessels, would in any other organs than the genital, have eventuated in inflammation, and the inflammation in certain lesions; and yet it is observed that the

patient's disease yielded promptly to local depletion, a result quite inexplicable had inflammation previously existed, and produced, as it would, organic changes of structure." . . . (p. 324.) "The uterine disease presented all the well-defined symptoms that are indicative in other organs of inflammation, but still the vascular action did not extend beyond a congestion." (p. 320.)

In Case CCCXV. we have presented a woman with congestion of the uterus, ovaries, and vagina following a syphilitic infection; then the formation of an ovarian tumour; an attack of phlegmasia dolens; the full development of the tumour, to the size of the uterus at nine months; pregnancy at full term with gradual subsidence of the tumour; delivery, and the redevelopment of the tumour, with a renewal of all constitutional and local symptoms, except those immediately dependent upon the ovarian disease. In commenting upon this case, Dr. Chapman remarks:—

"Few physicians would, in the face of such profound general and local disorders, have questioned the inflammatory nature of the disease, and many, perhaps most, would at least have taken the occurrence of phlegmasia dolens as a positive proof of either hysteritis or ovaritis." He attributes the phlegmasia to probable pressure by the ovary upon the iliac vein, and says of the tumour, "That congestion, and not inflammation, was the morbid action present in the ovary, is conclusively shown by its growth, since this, a quickened assimilation, would naturally attend a more active circulation, but could not, by any known law of the economy, result from the phlogistic process." (p. 327.)

The author does not follow up this case to a final conclusion, as the patient left the country, but it would appear to have been one of ovarian dropsy, partially arrested for the time, by uterine development, with absorption of its contents under pressure; to be again developed after a normal restoration of all the other pelvic viscera, a condition not uncommon under similar circumstances. The reviewer remembers an instance where an ovarian tumour remained quiescent for 14 years after a pregnancy, and then became redeveloped to an enormous size. The question in this case would appear to rest upon whether ovarian dropsy is, or is not, the result of a true inflammatory action.

Class VII. same as Class VI., but somewhat modified, as existing in nulliparæ. Upon this variety of cases the author remarks:—

"In the unfruitful female, on the contrary, there are no intermediate stages [as in the child-bearing], but a sudden and abrupt transition from mild to severe, from an insignificant hyperæmia of the cervical mucous folds, Class I., to a profound congestion of the uterus, ovaries, and vaginal coats, Class VII. In the former, womb-disease is usually simple in character and limited in extent, and after a longer or a shorter time, responds to treatment; but in the latter, it is always wide-spread and intractable, and too often sets at defiance the resources of medical art." (p. 343.)

"As the virgin uterus has never been developed by pregnancy, its body is not hypertrophied, but only slightly enlarged by a fulness of its vessels [except in rare instances]; its neck is not changed in size and shape, but retains its normal bulk and contour, and its mouth is not everted or expanded, but rather is more closed by the spastic contraction of its sphincter; and yet, strange to say, these various conditions, apparently so favourable, and often such as fail to offer the more ordinary evidences of disease, are serious if not insurmountable impediments to the success of our remedial appliances." (p. 344.)

"The simple act of hypertrophy, though considered by most hysterologists as the gravest complication, will always mitigate the pressure [on the nerves] and often banish the irritability that existed at the onset of the disorder." (p. 345.)

Dr. Chapman regards the *vaginismus*, so frequently recorded by him in cases of nulliparæ, as a symptomatic evidence of vaginal congestion, and says:—

"Notwithstanding the array of authorities to the contrary, it is certain that this exalted sensibility in nulliparæ is indicative of congestion of the uterus and vagina, and is a tolerably exact measure of its amount and extent. Indeed the sensibility uniformly advances *pari passu* with the congestion, and is almost a positive proof of its existence." (p. 354.)

The question in the mind of the reviewer is, what is *vaginismus?* Dr. Sims says:[1] "By the term vaginismus, I mean an excessive hyperæsthesia of the hymen and vulvar outlet, associated with such involuntary spasmodic contraction of the sphincter vaginæ as to prevent coition." He also remarks (*op. cit.*) that the *vaginal* surface of the hymen is not abnormally sensitive to the touch; and that the most perfect examples of the disease he had seen were uncomplicated with inflammation. This term, as originated by Dr. Sims, we conceive to be misapplied in the cases reported by Dr. Chapman, which, although affected with a spasmodic contraction of the vagina, were entirely different in other respects from those reported by the former, in which the hyperæsthesia and spasm were at the orifice of the vagina, and constituted the primary disease. There are several diseases of the larynx which are associated with spasmodic action, but there is but one entitled to be called *laryngismus stridulus;* so there may be vaginal spasm which is associated with congestion or inflammation, not properly entitled *vaginismus.*

The work of Dr. Chapman concludes with general remarks upon treatment, including the preparation of tents, formulæ used, etc. The clinical cases given amount in all to 357, of which 280 are very closely abbreviated. Of the latter class, a large proportion might, with a pecuniary advantage to the purchaser, have been left out, as more than half of them are of no practical value, the results of treatment not having been ascertained, or the patients having discontinued their visits before any material benefit could have been obtained, no less than 92 having visited the *clinique* but once, and many of these not having been thoroughly examined, or their treatment commenced; 34 having called but twice, etc. We know that there are great difficulties and annoyances to contend with in the treatment of walking cases, and have very great doubts about the propriety or safety of ever using tents in such subjects, unless we can afterwards visit them at their homes; but nothing can justify an author in making his book large at the expense of the reader, without rendering an equivalent value. The volume is neatly printed, the illustrations are generally good, although not always anatomically accurate, and the treatise contains much that is valuable, although the opinions of the writer are in many instances of questionable correctness. We believe that the text, by a greater simplicity of style, and proper curtailment, might have been reduced nearly one-half, without any detriment, but rather to the credit of the author, and to the decided advantage of the reader.

R. P. H.

ART. XXIV.—*Practical Suggestions in Naval Hygiene.* By ALBERT LEARY GIHON, A.M., M.D., Surgeon United States Navy, Member of the Naval Medical Board. Washington: Government Printing Office, 1871.

THIS is a thoroughly practical book, well adapted to the purpose for which it was written. While unable to accept quite all the opinions and precepts it enjoins, we may fully agree with Dr. Ruschenberger, U. S. N., in the indorse-

[1] Uterine Surgery, by Dr. J. Marion Sims, New York, 1866, page 318.

ment contained in his introductory letter, to the effect that the work is so executed as to "entitle its author to the praise and thanks of all who are interested in securing for the nation an efficient naval service." Its subjects are presented in eighteen sections or chapters. The first contains a brief summary statement of the "Province of Naval Hygiene." The next three consider the "Examination of Recruits," the "Receiving Ship," and "Navy Yards." The details given in these chapters are chiefly of immediate interest to those connected with the navy. The following passage may be appreciated by every reader:—

"The moral health of a crew is as necessary to discipline and efficiency as the normal condition of their bodies. The superiority of the modern over the old-time sailor, as an intelligent, thinking man, is evident to the unprejudiced, and the late war demonstrated that he was no less zealous, brave, and competent than his ruder predecessors, who made a naval reputation for their country. It is the province of hygiene to correct all errors and abuses whatsoever which enfeeble the body, obtund the mind, or degrade the moral nature of the sailor. The purpose of its suggestions is to diminish sick-lists, empty brigs, and banish from the berth-deck the filth, obscenity, and profanity, of the existence of which those only are ignorant who never visit it except when prepared for inspection."

It is no doubt perfectly true, as our author asserts, that dampness, dirt, foul air, and darkness are the direst enemies with which the sailor has to battle when afloat. Leagued together, they slaughter more than all the adversary's powder and shot. Sir Gilbert Blane and Prof. Guy are quoted in support of the judgment, that the success of navies depends greatly upon hygiene, which, during times of peace, may prepare them for exceptional periods of conflict. Two not unimportant points of advice may be noticed as we pass over these chapters. One is that, as before shown by Medical Inspector Wilson in his work on Naval Hygiene, it is a common defect in pumps to be too short to reach to the bottom of the well, so as to discharge all the accumulated bilge-water. Fonssagrives is cited as giving an instance of the serious prevalence of dysentery on board of a French corvette, in evident connection with this as a cause. Another matter of consequence is the avoidance of solid bulkheads in the inhabited parts of vessels. "Every partition, those separating private apartments as well as those marking the larger subdivisions of ward-room, steerage, warrant-officer's steerage, sick-bay, etc., should be latticed or gratinged above and below. This can always be done without any sacrifice of strength." By such means air will be allowed to circulate to very great advantage.

In the next section, Surgeon Gihon is quite eloquent upon "Humidity," as the greatest danger that the sailor encounters, greater than that of the mighty deep on which he floats:—

"It is not the water without his vessel that imperils his life so much as that within it—that which saturates his clothes and bedding, fills the air he breathes, and, creeping in wherever that air can enter, permeates the very tissue of the wood of which his ship is built. This is his enemy; terrible because unseen, powerful because denied, depreciated, and therefore unresisted. Fewer lives are lost by shipwreck than by the operations of this subtle agent."

Excessive and unduly frequent wetting of the decks is very properly denounced as promotive of bronchial, pulmonary, and rheumatic affections. We have observed the same mistake, with similar effects, even in the wards of a large municipal hospital; but of course it must be worse at sea. "Berth-decks and covered gun-decks do not require to be wetted oftener than once, or at most twice, a month," and then only when the weather is clear and dry.

Ventilation is well treated in the next following section; then, *Light*, *Clothing* and *Personal Cleanliness*. Under the head of *Food* occurs our first occasion of partial dissent from our author's conclusions. His admissions on the subject of *spirit-rations* appear to us to be only half-truths. Thus he writes:—

"The objectionable feature of the old service of grog was that it was drunk undiluted and upon an empty stomach. The moral argument that it engendered and fostered a fondness for intoxicating liquors applied only to boys and a few landsmen, most sailors, firemen, and marines having already acquired the taste and habit before entering the service. It is doubtful whether even three years of enforced total abstinence could destroy the appetite in the confirmed inebriate."

Experimental evidence has now been abundantly furnished by Dr. Parkes, Count Wollowicz, and Dr. B. W. Richardson, proving that alcohol, in a state of *health*, is a *waster* of energy, especially of the heart. In disease, under circumstances capable of pretty definite recognition, it often does excellent service toward the economy of force. Under extraordinary exertion or exposure also, it is, when given in small amounts, useful. Possibly this latter function of alcohol has been, since the observations above mentioned, rather too much depreciated. Surgeon Gihon, while not advocating the reissue of a daily ration of grog, reasonably advises that provision should be made for its proper use in emergencies; especially when, in bad weather, the rolling of the vessel prevents the lighting of the galley-fire, and the preparation of coffee and tea. These last beverages, he correctly admits, "to a large extent accomplish the same results as alcohol," and he includes also tobacco as a partial substitute for it. Prof. Parkes has, in his work on Hygiene, emphatically urged the abolition of the spirit-ration in the British army. When it was, by Sir Hugh Rose, reduced in India to one-half, Prof. Parkes regarded the reform as yet insufficient. As we find, in the book before us (p. 131), the statement that "drunkenness is the source of most of the disturbances on board ship," we are surprised at the above-shown comparative indifference to the need of such protection against it as may be maintained by authority. Experience in "sanitaria" for the treatment of inebriates, at Boston, Binghamton, and Media, Pa., shows that a shorter time than three years will be quite sufficient for the restoration of voluntary control over the *methomaniac's* appetite. Government should do what it can in this direction; however, it may happen that, with many men, when they reach the shore, "the land-shark and prostitute can nullify in half an hour the resolutions of years." We regard it as an important testimony to the expediency of the abolition of grog, that, as Surgeon Gihon says, when it was given out, "on board of a sloop of war having a complement of one hundred and sixty men, I have known only forty to drink their grog."

In reference to the *régime* of the navy, fault is properly found with the arrangement of the men's meals. With breakfast at 8, dinner at noon, and supper at 4, they are made to eat three times in eight hours, and to fast through the other sixteen; although during the latter time many of their most arduous duties have to be performed. Dr. Gihon very well says that no economy of fuel can excuse such an anomalous practice. An excellent section on *Potable Water* follows, and others on *Sleep*, *Exercise*, and *Climatic Influences*.

In the last of these, a rather too positive assertion occurs, it appears to us, that "acclimation is no longer regarded as a fact." We must again appeal to Prof. Parkes, as well as to Miss Florence Nightingale and other authorities, as holding that it is, at least, often a possibility, when care is taken to meet the new conditions attending a change of climate, in modes prescribed by sanitary science and experience. Admirable regulations for vessels stationed

on the west coast of Africa are quoted by our author, as issued by Secretary Preston, U. S. Navy, in 1850; and still in operation. In connection with those necessary in tropical climates, some facts of interest are mentioned concerning heat-stroke. The symptoms of this affection (not, therefore, very well called *insolation*) often occur among men "in the fire-room of steamers, on board the monitor class of armoured vessels, in small, ill-ventilated cells." Maclean reports the same as taking place on the Red Sea, in August and September, on mail steamers where over-crowding and impure air are added to excessive heat; it being observed that "most of the cases occurred while the sufferers were in the horizontal position in their ill-ventilated cabins." Boudin quotes also the case of a French man-of-war which, while at Rio de Janeiro, had a hundred cases of "insolation" out of a crew of six hundred men. "Most of these men were attacked, not when exposed to the direct heat of the sun, but at night when in the recumbent position; that is, when breathing not only a hot and suffocating, but also an impure air."

Here is a graphic account of the common unsanitary conditions which make many ships "fever nests," maintaining their own endemics of yellow fever, typhus or cholera.

"The decay of the wood of the vessel and of the chips under the ceiling, the leakage of brine from provision casks and of molasses and vinegar from the spirit-room, the drippings of oil from the machinery of steamers, the sifting of coal dust from the bunkers and of ashes from the fire-room, the influx of salt water, its admixture with fresh spilled from the tanks and the consequent death of the microscopic organisms which inhabit it, together form a putrescible mass, the malarious emanations from which pervade the vessel and occcasion a general predisposition to zymotic and paroxysmal febrile affections; therefore, while so much attention is given to the avoidance of unhealthy localities, let some little be paid to the smouldering pestilential fire—the artificial marsh over which so many human beings are living in fancied security."

Testimony is adduced from the Admiralty Report of the British Navy for 1865–66, showing that, in respect to outbreaks of yellow fever on board ship, "nearly all the vessels which have been most scourged in late years were unmistakably unhealthy ships, as evidenced by their larger number of cases of general sickness, not only during the yellow fever years, but also in those which preceded or followed them." This kind of reputation, with the L'Eclair, was such that, to efface the remembrance of a terrible experience, her name was changed to Rosamond. It is well said by Surgeon Gihon, that "the system of quarantine which proposes to imprison both sick and well upon the infected vessel until the epidemic exhausts itself for lack of new victims, is a barbarous relic of popular ignorance and superstition." "Michel Levy, and Fonssagrives, in their respective works on hygiene, have protested energetically against the useless and ridiculous impositions of the system of quarantine in vogue, and the medical officers of every navy are agreed that, no matter what the disease, both sick and well should be immediately removed from the vessel, which should be thoroughly cleansed and renovated." It will be an immense gain to the commercial as well as the naval service of all countries, when these facts and teachings shall be fully and generally appreciated.

Excellent suggestions are given by Dr. Gihon under the head of *Moral Influences*.

The value of suitable reading for the men while at sea; of innocent and varied amusements, and of frequent visits to the land, the privilege being forfeited if abused; and other like themes, are well considered. But we are not quite so well assured of the validity of the reasons assigned for our author's view, that "the naval hygienist has no other alternative than to recommend frequent

liberty on shore as the only practicable means of preventing the commission of secret sexual vices." Were marriage, with the sailor, the rule, and absence from home usually short, this would certainly be an unquestionable sanitary principle; but, as we understand the remedy conceived by Dr. Gihon to be more unrestricted, we have against it, at least the very portentous evils of syphilis and gonorrhœa; while, in the very same sentence as that above quoted, it is admitted, that "when these habits [of secret vice] are established, even this liberty *will not serve to eradicate them.*"

Acquaintance with the higher needs of human nature is shown by our author in his observation of the discontent of the sailor with the announcement that "there will be no Sundays" on board the ship. "The sailor," he adds, "has a considerable religious element in his character, and, though restive under long church services, he entertains a respect for everything sacred. In most vessels of the Navy the Sabbath is scrupulously observed."

After a very good chapter upon the care and management of the "*Sick-Bay*," Surgeon Gihon finally epitomizes the instruction conveyed in his volume in a code of "*Sanitary Regulations for the Navy.*" These consist of thirty definite injunctions, embracing all needful topics; and they are followed by a shorter series of similar "*Sanitary Regulations for Transports.*" Good sense, knowledge of his subject, and fitting conciseness of expression, characterize the rules thus given. From the stand-point of general hygiene, we are not able to see how they could be at present much improved. Were the book before us made a necessary part of the studies, not only of every one of those belonging to the service for which it was written, but also of every captain, mate and steward of all merchant vessels, it is probable that the duration of life amongst sailors might be materially increased; and the number of fatally infected vessels, now the dread of our great cities, might be greatly diminished. But it will take time to effect such reforms. As Dr. Ruschenberger remarks in his introductory letter to this work, "a nail is not usually driven home by a single blow, nor is a thought communicated and made common among men of any class by a single publication. Frequent and successive blows force the nail into position. Repeated presentation of facts and ideas in various aspects has to be made, to induce the common and heedless mind to receive them."

H. H.

ART. XXV.—*Transactions of American State Medical Societies.*

1. *Transactions of the South Carolina Medical Association. Annual Session*, 1872. *Held in Columbia, April* 16 and 17, 1872. 8vo. pp. 108.
2. *Communications of the Rhode Island Medical Society for the years* 1865–72. 8vo. pp. 175. Providence, 1872.
3. *Transactions of the Twenty-First Anniversary Meeting of the Illinois State Medical Society, held at Peoria, May* 16, 1871. 8vo. pp. 185. Chicago, 1872.
4. *Transactions of the Medical Society of the State of Pennsylvania, at its Twenty-third Annual Session*, June, 1872. 8vo. pp. 264.

1. THE Session of the *South Corolina Medical Association* was opened with an address by Dr. F. PEYRE PORCHER, the President, in which he delineates with great clearness "the phenomena, and results under treatment, of yellow fever, as it prevailed in Charleston during the summer of 1871, so far as it came under his personal observation."

The most interesting portion of the address, perhaps, is that devoted to a consideration of the different forms or shades of fever which prevailed at the same time, in the same situations, and in the same class of persons, as the yellow fever, which the author considers may be received as, in fact, milder—modified forms of yellow fever, inasmuch as they and the recognized type of the yellow fever usually prevail together.

It will be proper to remark, that in reference to the various grades of fever of every shade of intensity, which may prevail conjointly during an epidemic of yellow fever, Dr. P. does not pronounce them all to be cases of yellow fever, giving immunity from second attacks. He has found it impossible to decide with precision, into what category to arrange some of the cases occupying an undeniably middle ground—too severe to be classed with simple fever, and yet hardly enough so to be classed as yellow fever, conferring immunity from future attacks; and yet, Dr. P. remarks, "the physician has seen apparently milder fevers, at their outset, followed by black vomit."

The treatment of yellow fever, as laid down by Dr. P., is based upon correct therapeutical principles. The chief points are, 1st. The absolute necessity of its early inception. 2d. The employment of a large mercurial purge, followed by a saline cathartic—thus emptying the bowels, and disgorging the liver and the glandular apparatus. 3d. Simultaneously and from the very beginning, using revulsives to the surface of the abdomen; hot stimulating baths to the lower extremities—with the assiduous and protracted application of ice-cold water to the head, hands, and arms—*as long as there is a continuance of abnormal heat.* 4th. All purgatives, all active depressing agents must now be discontinued absolutely, and give place to what is, perhaps, more efficient than any simple placebo—a mild alkaline diuretic and diaphoretic, containing morphia. The cold sponging—towels or cloths he considers preferable to sponges, for the purpose indicated—and the use of sinapisms, and hot mustard pediluvia are to be continued so long as headache, morbid heat of surface, with high thermometric range, indicate the existence or progress of combustion and destructive tissue metamorphosis—*fever*, in other words. Then, too, the recuperative powers of nature are to be trusted to, aided, if need be, by mild tonics, moderate stimulants, and nourishing diet, etc.

Dr. P. highly eulogizes cold water, externally applied, as an efficient agent in the reduction of febrile heat. This was first pointed out by Dr. James Curry, of Liverpool, early in the present century, and its power as an anti-febrile agent has been fully recognized of late years throughout nearly all the German States, in whose hospital establishments immersion in cold water baths is used with the utmost boldness in the treatment of all the zymotic fevers, and with the most beneficial effects. In the treatment of yellow fever in the United States, cold water seems to have been latterly, in great measure, overlooked. It is true, the late Dr. Wm. Currie, of Philadelphia, directed ice to the head of his yellow fever patients during the height of the febrile stage, and as a common drink, iced lemonade; nevertheless credit is due to Dr. PORCHER for having invited the attention of the physicians of the present day to the importance of the hydro-therapeutic plan of treatment in yellow fever, and its power of changing the entire character of the disease and rendering milder its entire course.

The next paper is an account, by Dr. R. W. GIBBES, of a wound in left hypochondrium, made with a pocket-knife, one and a half to two inches long, two and a half inches above the umbilicus, and same distance to the left of the mesial line, through which the omentum protruded largely. Recovery occurred in this case after ligation and excision of six inches of protruding omentum. The omental stump and ligature were left within the cavity, the external wound

being closed by three deep stiches of double horse-hair. In about forty days the patient was found to be "quite well."

Dr. GIBBES relates next a most interesting case of "Interstitial Pregnancy," in a negress 35 years of age, and the mother of six living children. Death occurred from rupture of the sac and hemorrhage into the abdominal cavity.

A paper by Dr. JAMES MCINTOSH follows, on "Dysmenorrhœa" and its treatment with the sulphate of quinia and extract of datura stramonii seminis. The results of an experience with each of these drugs, used separately, led Dr. M. to unite them in the following proportions, varied according to the requirements of each individual case. "Give a pill consisting of ¼ to ½ gr. ext. daturæ stramon. sem.; ½ to 3 grs. sulph. quiniæ; ¼ to ½ gr. opii.; 1 to 2 grs. camphor, three times a day for 5 days; beginning 3 days before the catamenial discharge, and continuing for two days after its inception. The same treatment is to be commenced just previously to the next monthly period, and usually from four to eight repetitions, where there is no mechanical obstruction, will secure a regular, painless monthly flow." Latterly Dr. M. has added pulv. ipecac. to the above pill, and, as he states, "with benefit." "With the foregoing treatment should always be combined such emmenagogue and ferruginous medicines as an anæmic or other condition may require, while special directions should be given to procure a daily action of the bowels. A careful avoidance must be observed of exposure to cold or wet, and great care in keeping the feet warm, and a good circulation in the lower extremities generally."

Dr. T. GRANGE SIMONS relates a case of "Atresia Vaginæ," in which death occurred from tetanus at the menstrual period; with an account of post-mortem appearances. The left ovary was bound down to the uterus by broad bands of adhesion; length of uterus two and a quarter inches; greatest width one and three-quarter inches. The uterine canal was obliterated, except at the cornua; no trace of cavity or os. The Fallopian tubes on both sides obliterated from uterus to fimbriæ, but patulous from fimbriæ to ovary. Pelvis contracted antero-posteriorily to two and a half inches.

The next paper is on the "Origin of Carbonate of Ammonia." A theory of its origin as the precipitate of the ammonio-magnesium phosphates is advocated.

A paper containing the histories of a series of surgical cases of more or less interest is communicated by Dr. R. A. KINLOCK.

Dr. R. W. GIBBES relates a case in which cysticerci were found in the human heart as well as in other muscles.

The histories of two cases are given by Dr. B. W. TAYLOR of "Albuminuria complicating Pregnancy," and continuing during the puerperal period. Convulsions on day after delivery in one case. In the second case general anasarca in eighth month of pregnancy, with albuminous urine, which continued after delivery for some twenty days; no convulsions.

Dr. H. W. DE SAUSSURE relates some cases of "*Glanders*" in the human subject, death resulting in one case from infection derived from simple attendance upon a diseased horse.

A case of "Extra-uterine Pregnancy" is related by Dr. JOHN T. DARBY, as one of *abdominal fœtation*. Although, in this form of extra-uterine pregnancy, surgical interference promises better results than in either of the other forms for the life of the mother, yet in Dr. D.'s case death was the unfortunate result.

2. The first Communication to the Rhode Island Medical Society (read Sept. 21, 1870), on "Mysterious Epidemic Influences," by JAMES H. ELDRIDGE, M.D., would seem to confirm a remark made by the late Dr. JOSEPH PARRISH, that, so far as his experience went, there appeared, at times, a species of epidemic influence causing the prevalence, in the same communities or neighbourhoods,

of the same forms of chronic disease, abnormal nutrition or metamorphosis of tissues, or even the same kinds of accidental injuries, in groups or rather in rapid succession.

The second communication, on "Popliteal Aneurism" (read Dec. 21, 1870), by S. CLAPP, M.D., is a highly instructive paper. The treatment of popliteal aneurism by pressure and by ligature is duly considered in general terms. Dr. C. gives Syme's method, by ligature, the preference; "believing it to be the *safest, least painful*, and *surest of success*."

In the third communication, by L. F. C. GARVIN, M.D., it is maintained that alcohol is not a *necessary* article of food, and that, even as a stimulating condiment at our meals, its popular use is of very doubtful propriety.

In the fourth communication on "Vaccination" (read Sept. 20, 1871), the author, E. T. CASWELL, M.D., presents a masterly exposition of the prophylatic powers of vaccination against smallpox, and a triumphant vindication of the process from all the objections urged against it.

In the fifth communication (read March 15, 1871), the author, G. CAPRON, M.D., presents some sound practical suggestions on the use of ergot.

In the sixth communication, Dr. C. W. PARSONS discusses the therapeutic application of chloral-hydrate. The ascertained properties of this comparatively new article of the Materia Medica point to its usefulness in three kinds of cases: "1. In such conditions as are attended with morbid wakefulness; or as a hypnotic. 2. In any very painful or distressing diseases; as an anæsthetic. 3. In convulsions, or any forms of motor excitement."

3. The Transactions of the Twenty-first Anniversary Meeting of the Illinois State Medical Society are highly interesting. The first paper, by Dr. E. L. HOLMES, is an instructive statistical report of 8967 cases of disease of the eye examined by him during the last fourteen years, of which number 243 presented abnormal conditions of the lens—201 being various forms of cataract. In seven of the cases of cataract, extraction by the flap operation was performed; in 12 cases the same operation, preceded by *iridectomy;* in 9 cases extraction was by the *linear* operation; in 3 cases the same operation, with preliminary iridectomy; in 45 cases extraction was performed by Graefe's modified linear extraction; in 2 cases the lens was depressed; in 14 cases extraction was by corneal division; in 11 cases by sclerotic division, and in 16 cases the operation was for the removal of capsular remains. Of the 46 extractions through the modified linear section 6 were total failures, and in 40 the result was good. Dr. H. remarks, "that of those 40 successful cases, 32 occurred in succession, with scarcely an accident during the operation, or pain after it. Of these favourable cases, two were complicated with adhesions of the iris; two with solution of the vitreous humour, and four with sequelæ of chronic conjunctivitis. Of the six unfortunate cases, two were complicated with extensive posterior synechia, and two with serious sequelæ of conjunctivitis. All of these unfavourable results were due to iritis, except one, in which there occurred a fearful suppurative irido-choroiditis."

The report of Dr. N. S. DAVIS, of Chicago, on the "Medical Uses of Carbolic Acid," is confined to "a plain statement of his own experience in regard to the employment of the remedy." In the various grades of irritation, or morbid sensibility of the mucous membrane of the alimentary canal, especially in children, Dr. D. has found it a very valuable remedy. In conclusion, he remarks, "From the foregoing details, it will be seen that we do not regard carbolic acid as a specific for the cure of any form of disease, but from its mildly sedative influence on the organic nervous system and mucous surfaces, coupled with strong

antiseptic properties, it is admirably adapted to meet certain indications that arise during the progress of a great variety of diseases."

The report on "Cholera Infantum," by Dr. D. W. YOUNG, presents a very fair monograph on the disease. The correctness, in their general outline, of the views inculcated in respect to the causes, the pathology, and the treatment of cholera infantum, is confirmed by our own prolonged and careful study of the disease. We would, however, object to the use, as recommended by Dr. Y., of alcohol in cholera infantum, either as a preventive or remedial agent.

A very outspoken report on "Criminal Abortion" is presented by Dr. ADDISON NILES, of Quincy, Ill. The daily increase of fœticide by criminal abortion reflects no slight amount of shame upon such females as make themselves *particeps criminis*, and of positive guilt upon the physician who shall lower himself so far as to become the voluntary perpetrator of the crime.

The report "On Surgery" was divided between the two members of the committee, the improvements in "General Surgery" being committed to Dr. E. ANDREWS, of Chicago, and those in "Plastics and Orthopedics" to Dr. D. PRINCE, of Jacksonville, Ill. The first section of the report presents a full account of domestic contributions to general surgery. In the second portion of the report, which occupies fifty-six octavo pages, illustrated by 38 wood engravings, Dr. PRINCE has given a very full and instructive exposition of the leading improvements recently made in Plastic and Orthopedic surgery.

4. The Twenty-third Annual Session of the Pennsylvania State Medical Society was opened by an Address from the President, Dr. J. S. CRAWFORD.

Following this was an instructive "*Address on Obstetrics*," by Dr. W. L. ATLEE, of Philadelphia. He selected for his theme—*The Speculum; its use in the diagnosis and in the treatment of the Diseases of the Uterus.*

Reports were received from seventeen of the County Societies; some of which are very meagre and unsatisfactory. A few make no reference to prevailing diseases, being devoted entirely to biographical notices of recently deceased members; others notice only the prevailing diseases in that portion of the county to which the practice of him by whom they were drawn up was confined, or to a single one of the most formidable of the prevailing diseases. With very few exceptions, the reports are deficient in meteorological observations and in accounts of medical topography—circumstances so essential to be known in the investigation of the etiology of endemic and epidemic diseases.

The reports seem to indicate a very decided decrease in the prevalence of fevers of recognized miasmatic origin, even in many of those portions of the State where formerly those fevers prevailed as an annual endemic, and where few escaped an attack.

Typhoid or enteric fever would appear to have supplanted, in many locations, their former malarial endemic. It has certainly prevailed, during several years past, more or less extensively, and in a type of greater or less severity in different localities throughout the State. In some of the miasmatic districts there prevails a form of typhoid fever, which commences as an ordinary malarial remittent, and assuming, sooner or later, the diagnostic characteristics of enteric fever.

Relapsing fever is noticed in several of the County Reports as having appeared during 1871–2 to a limited extent. In the report from Philadelphia County it is stated, that, while in 1870 the deaths in that county from relapsing fever amounted to 155, in the period embraced in the report before us they were only 7.

The disease which prevailed to the greatest extent within the bounds of the State was smallpox; few sections have been entirely free from its visitation.

Though in some places the origin of the disease could be clearly traced to contagion introduced by infected persons or by fomites from without, the disease, as it has spread throughout this country, and during the last few years over the larger portion of Europe, has assumed the unmistakable features of an affection that owes its origin and rapid spread chiefly to some general epidemic morbific cause. In the report from Philadelphia County, where the disease prevailed to the greatest extent, will be found a series of interesting facts bearing mainly upon the etiology of the malady.

In every report the testimony is very strong in favour of vaccination and re-vaccination with pure efficient matter as a certain preventive, when opportunely performed, against the introduction and spread of variola among a community.

Scarlet fever prevailed, to some extent, throughout Pennsylvania. It was generally of a mild type, with little affection of the throat or serious sequelæ, nor was it productive of a large mortality. Its milder and less destructive character may, in part, be attributed to the hydro-therapeutic unstimulating treatment to which it has been recently subjected.

The same remarks may be made in respect to measles. The disease was mild and easily managed, except when complicated with bronchitis, pneumonia, or with pertussis. The latter complication was frequently met with in the neighbourhood of Sharon, Mercer County.

Cerebro-spinal meningitis prevailed pretty generally throughout the State, in some sections to a much greater extent than in others. Upon the whole, the mortality produced by it was much less than was the case in the widespread epidemic prevalent a few years since. The report from Bradford County is made up almost entirely of a sketch, by Dr. E. P. ALLEN, of the disease as it prevailed in the *county* during 1871. The sketch will very fairly depict the disease as it was met with in other sections of the State.

Diphtheria prevailed extensively in the State. A better acquaintance with the true character of the disease and a consequent adoption of a more rational plan for its treatment has disarmed it of much of the fatality to life which was formerly incurred by its attack.

Dr. DICKESON, of Media, Delaware County, describes an anomalous form of eruptive disease, which he believes to have been "epidemic varioloid, or varicella, with a modified eruption." D. F. C.

ART. XXVI.—*The West Riding Lunatic Asylum Medical Reports.* Edited by J. CRICHTON BROWNE, M.D., F.R.S.E. Vol. ii. 8vo. pp. 306. London: J. & A. Churchill, 1872.

IN reviewing the first volume of these Reports a year ago, we took occasion to advert to the somewhat common complaint that the medical officers of insane hospitals contributed little to the common stock of professional information. We referred to some of the peculiar conditions of hospital life as partly answerable for the little time and attention devoted by alienist physicians to systematic experiment and literary labour. We pointed out the supreme importance, to many curable and convalescent patients, of frequent and protracted social intercourse with the officers. However desirable it may be that observations should be carefully made and recorded, and physiological and therapeutic investigations widely extended, it is infinitely more desirable that minds struggling upwards towards the light from out the gloom of melancholia—deep as

the very shadow of death itself—or beginning to regain steadiness and self-control after the stormy chaos of acute mania, should be cheered, aided, and strengthened by those who best understand their trouble. To accomplish this good end, nothing so well avails, at least among patients of some culture and refinement, as familiar personal contact with the medical superintendent. Upon him rest their hopes of cure, and of restoration to the world. In him they put their trust more than in any other earthly being. In his presence they find the highest incentives to self-control and propriety of conduct. To deserve his approval they will put forth wholesome efforts which could never be elicited by the best endeavours of the kindest attendants.

While thus striving to remove the unjust reproach cast upon the officers of insane asylums for apparent indolence or neglect, we yet were glad to learn that the officers of a very large English asylum[1] had resolved to write out and publish the results of such observations and investigations as seemed most likely to be interesting and profitable to their brethren in other walks of medicine.

The volume before us is hardly equal in interest and value to its predecessor. It seems a little as if the editor had determined upon a goodly volume yearly, without any great regard to the quality and real worth of the articles furnished.

Of the thirteen papers which compose this volume, five only are by men actually connected with the asylum. Six are by past members of the hospital staff; and two—that on electricity and that on impairment of language—by men having no connection with the asylum, though allowed to use its cases.

In the opening essay, J. Wilkie Burman, M.D., of Edinburgh, an officer of the asylum, gives the results of his experiments upon the physiological and therapeutical action of the alkaloid conia. The succus conii had been much used in the asylum; but often with very unsatisfactory results in commencing on new parcels, some proving nearly inert. This testimony to the great inequality of different lots of succus conii agrees closely with American experience. In using the alkaloid, it was hoped that all uncertainty and inequality would be avoided; but this did not prove to be the case. Not only were some specimens more active than others, but one possessed a peculiar acridity, together with a paralyzing effect on the heart which does not belong to the pure drug. Nevertheless the writer believes that from certain prominent chemists a safe and reasonably uniform article may be now obtained.

Physiological researches were made in experiments upon pigeons, frogs, rabbits, guinea-pigs, dogs, and cats, and repeatedly upon the writer's own system and those of able-bodied officers and attendants. He used the subcutaneous method, because of the supposed highly irritant effect of the drug on the stomach. To avoid such action in the cellular tissue, he neutralizes the conia with acetic acid, according to a formula which he gives. The combination possesses all the medicinal effect of the alkaloid. Though admitting a belief that the drug thus combined might be given by the stomach, he says he never has so given it, but has continued to administer it by the subcutaneous method. This is to be regretted. We confess to an old-fashioned prejudice in favour of the natural channels for the administration of medicines. The hypodermic system, now so much in vogue, harmless as it usually is, yet is attended with a certain degree of risk, to say nothing of its unpleasantness.

Both physiological and therapeutical experiments, as well described by the writer, indicate that we have in this alkaloid a very powerful and valuable drug. Various preparations have long been used and highly prized in American hospitals for the insane; but have often proved weak and inefficient. Dr. Burman

[1] Containing from ten to twelve hundred patients.

believes the drug to act especially on the motor centres. A combination of the acetate of conia with the acetate of morphia has been found especially beneficial in cases of high maniacal excitement.

Dr. Herbert C. Major gives the results of a careful comparison, under the microscope, of sections of gray matter from corresponding convolutions of two brains: one healthy, and the other atrophied from chronic mental disease. He begins by quoting and confirming a statement of Dr. Lockhart Clarke, that there is a difference in the relative proportion and arrangement of the brain-elements in different portions of the brain. In other words, in healthy brains the gray matter is thicker over certain convolutions than over others. This, if true, is certainly as important a fact as he deems it to be. Whether true or not, the method of observation which he adopted is unobjectionable. This was to make precisely correspondent sections from the sound and the atrophied brains, and compare them under the microscope. While aware that observers, to whose skill, experience, and judgment he is disposed to defer, have failed to recognize such diversities in healthy gray matter, and even in the cortical substance of sane and insane brains, he yet confidently maintains that his observations were correctly made. The entire aspect of the diseased sections was different from that of the healthy ones. The difference principally consisted in a diminution of the normal, large, angular, and fusiform nerve-cells, with an increase of the smaller cells and neuclei.

One point—all-important to the conclusiveness of these comparisons—is entirely ignored. Not a word is said as to the manner in which, or the length of time during which, these brains had been preserved before the sections were made. Unequal post-mortem change may have caused all the difference described. This course of inquiry is, however, of great importance, and we hope that Dr. Major, in multiplying his observations, may ultimately arrive at valuable results.

A paper on "Menstrual Irregularities and Insanity" adds little to the amount of our knowledge on the subject. The writer has, however, the good sense to escape the absurdities of some authors who, guided by their preconceived notions rather than by facts, are determined to find in checked menstruation the source of half the insanity of women, and in the restoration of the function the cure of at least as large a number.

The next paper, by Dr. Samuel Mitchell, details some experiments made upon the anæsthetic properties of a mixture of ether-vapour and nitrous oxide gas. Beginning with rabbits, the author subsequently proceeded to trials of the mixture upon himself and upon some of his friends. From these he is led to believe that anæsthesia is more easily and safely produced by the compound than by either agent alone. Some "general observations on stimulants" are appended, in which it is argued that stimulation, so-called, is but the first stage of narcotism. When nervous irritability is relieved by a "stimulant," the effect is due to the paralyzing action of the drug, wholly arresting activity in parts too feeble to act properly.

"Cranial Injuries and Mental Diseases," by J. Crichton Browne, M.D., editor of the work, is a continuation of an article in the previous volume. This paper deals with the mental results as determined by the locality of the cranial injury, and also describes the various mental manifestations liable to follow injuries to the head generally. Attention is directed to the frequency with which cerebral mischief appears diametrically opposite to the seat of violence. Epilepsy following frontal injury is regarded by the writer as a case of this sort. Two original instances are given: one extremely interesting from the varying fullness, pulsation, and colour of the scalp, covering a large aperture in the skull.

In this case, at the outset of epileptic convulsions, the cicatrix would appear bloodless and much sunken; afterwards, for an hour or more, turgid and bulging. Several other cases and experiments are quoted where the phenomena are explicable on the theory that the shock is so transmitted by the arched cranium as to be most destructive opposite the point of impingement. Injury to the third frontal convolution, and to the cerebellum, are referred to in connection with impairment of speech and modification of the sexual instinct.

Many cases are given to illustrate the varied mental phenomena following severe cranial injury. Most of these have been before published. Altogether, this instalment of Dr. Browne's essay, though very interesting, and containing many new cases with the old ones, can hardly be said to add much to the sum of professional knowledge.

An article on "Puerperal Mania" by Geo. Henry Pedler contains some interesting statistical tables of the disease as seen in the West Riding Asylum. A division, not altogether useless, is suggested, into "nervous," "anæmic" and "toxic" cases. In support of the latter designation the author mentions the conditions after delivery, which might not unnaturally lead to blood-poisoning.

Dr. Major makes his second appearance in this volume as the inventor of an ingenious little instrument for the measurement of the thickness of the gray matter covering the cerebral convolutions. He justly reasons that if the weight and measurement of the brain as a whole are of any value as helping to an estimate of intellectual power, the thickness of the gray matter, upon which mental processes are known to be dependent, must be of still greater significance. His device is simply a cylindrical glass tube, finely graduated, open at both ends, with the lower end brought to a circular sharp edge by grinding off the outside. This tube, by means of a slight rotatory movement, is made to penetrate, perpendicularly, the denuded surface of the cerebral convolutions. If the membranes are wholly removed the instrument penetrates like a punch, cutting without bruising. Placing the pulp of a finger upon the upper orifice, the tube can be removed, bringing out a cylinder of brain substance, of which the gray portion can be measured by the divisions which it covers. Tables are constructed containing the printed names of the principal convolutions, with blanks to be filled with the results of multiplied measurements taken in each locality. We are disposed to regard this little instrument as one of real value. It makes certainly the first approach to accuracy in estimating that portion of the cerebral substance acknowledged to be alone concerned in intellectual action. Dr. Major believes that different convolutions of healthy brains exhibit a diversity of thickness in the gray matter that forms their exterior, certain parts being always thickly, and certain others thinly, covered.

Dr. Patrick Nicol writes upon "The Mental Symptoms of Ordinary Disease." The leading idea seems to be, that diseases of organs not immediately connected with the mental powers do yet tend to produce certain kinds of mental disturbance. A knowledge of such tendencies, therefore, may give important suggestions as to the treatment of insane patients. Illustrative cases are first presented to show how diseases of an organic character attacking the brain, affect or leave unaffected the intellectual powers, according as the gray matter of the convolutions is, or is not, involved. General remarks follow upon the well-known tendencies of certain classes of bodily disease to affect the brain secondarily, producing all grades of disturbance, from slight exhilaration or depression to mania or profound melancholia.

A paper on "The Electric Treatment of the Insane" states the results of the electric constant current, applied to the head and the neck, in various forms of cerebral disease. In one case of "brain-wasting" and in three of melancholia,

no good resulted from this treatment. A very few cases of mania are regarded by the author as exhibiting benefit from such treatment. In acute dementia, the writer believes he has obtained more decided good effects. It is only fair to say that Dr. Allbutt does not claim any very great or marked results so far, though he regards the treatment as well worth an extended trial.

Dr. Aldridge, who contributed to the previous volume some valuable observations on the "Ophthalmoscope in Mental and Cerebral Diseases," publishes in the present issue some further observations as to the effects of certain drugs upon the intra-ocular circulation; together with the results of ophthalmoscopic examination in forty-three cases of "general paralysis." Nearly all the cases examined were somewhat advanced. In most of them a bloodless and atrophic condition of the whole or some part of the papillæ was observed, while in others a degree of passive congestion was present. We cannot see that, so far, these observations afford much help toward an understanding of the pathology of Paresis. Nevertheless, such inspections should be made and recorded, in the faith that ultimately they will be useful.

The drugs whose effects upon the circulation in the optic disks are here described, are belladonna, hyoscyamus, and picrotoxine (the active principle of cocculus indicus), as productive of hyperæmia; and laburnum and ergot as causing anæmia. Only four cases are adduced as supporting the author's view of the action of belladonna, and two of hyoscyamus; but in these the experiments were often repeated, with uniform results. Picrotoxine was tried only upon the lower animals, acting as a very powerful poison, causing hyperæmia of the disks and of the brain. Laburnum and ergot are believed to cause anæmia of the disks; but only one case illustrative of the action of each drug is here adduced.

In a paper on "The Use of Opium in the Treatment of Melancholia," Dr. E. Maziere Courtenay vigourously assails the position of those who of late years have so malignantly condemned and vilified the use of this drug in insanity. Notwithstanding the denunciations of some writers of high repute, Dr. Courtenay dares to say that, far from being made worse, weakened, impoverished in blood and weight, injured in appetite and digestion, by the use of opiates, many patients gain in sleep, general tranquillity, cheerfulness, appetite, digestion, strength, and weight.

While disposed to admit that this class of remedies has been abused, we believe, with Dr. Courtenay, that they are of very great value in many cases, including, though not confined to, melancholia. It is certainly a great mistake to maintain that even the protracted use of opiates is incompatible with good appetite, digestion, and nutrition.

Dr. W. A. T. Browne contributes an article on the "Impairment of Language the Result of Cerebral Disease." We can hardly give an idea of the import of this somewhat speculative paper, better than by quoting a few of its closing words. "A very large number of different deviations from the normal use of language must be taken into consideration besides its abolition, before we are in a position to generalize confidently upon the subject. It must be confessed that the physiological and pathological evidence as to the localization of an organ for such a faculty is as yet incomplete or contradictory." It is added that the weight of research and opinion favours the belief that some parts of the anterior cerebral lobes are connected with the articulate expression of thought.

Dr. George Thompson, whose applications of the Sphygmograph within the asylum wards furnished matter for an interesting paper in the previous volume, now gives us three tracings taken during the *status epilepticus*; one being ex-

pecially curious from the fact that a fit came on while it was taking, and thus recorded itself upon the paper. The tracings obtained during the *status epilepticus* are much nearer a straight line than those of health; the angles are all rounded off and the aortic notch wholly absent. B. L. R.

ART. XXVII.—*A Practical Treatise on Urinary and Renal Diseases, including Urinary Deposits. Illustrated by numerous cases and engravings.* By WILLIAM ROBERTS, M.D., F.R.C.P. Lond.; Physician to the Manchester Royal Infirmary, etc. Second American from the second revised and considerably enlarged London edition. 8vo. pp. 616. Philadelphia: Henry C. Lea, 1872.

THE importance which the kidney and its secretion have within late years assumed in the investigation of disease has rendered their study peculiarly attractive to the physician; hence, we are not surprised to learn that the first edition of Dr. Roberts's excellent treatise and the American reprint were exhausted some three years ago. The author has been unable, until lately, to undertake the revision of the work, but it has not suffered by the delay, for in almost every chapter evidence of careful emendation is found.

Two articles, one on suppression of urine, the other on paroxysmal hæmaturia, have been added. The former was one of the author's contributions to the first volume of the *Manchester Medical and Surgical Reports*, and was analyzed in the No. of this Journal for July, 1871, page 188. The author calls attention to the remarkable absence of coma and convulsions—the most common features of clinical uræmia—in cases of obstinate suppression of urine; and the cases related show that fatal suppression of urine, from blocking up of the ureters, generally runs its course without the usual symptoms of uræmia, as witnessed in Bright's disease.

In the article on Urea, we read that "the immediate effect of muscular exercise appears to be to restrain (or at least not to increase) the excretion of urea, but it is increased in the period of rest which follows exercise." This statement, although in accordance with the results obtained by Fick and Wislicenus, Frankland and Haughton, is disproved by the accurate and elaborate observations made by Dr. Austin Flint, Jr., upon a well-known pedestrian (see this Journal for January, 1872, page 163), and with which Dr. Roberts appears to be unacquainted.

Among the errors of omisson, we also notice the absence of any mention of an illusory detection of fat in the urine, which was pointed out a short time ago by Messrs. Lea and Atlee.[1]

Dr. Roberts calls attention to the pigmentary particles which are almost constantly to be seen, by the aid of the microscope, in the urine, and which, strange to say, seem to have been heretofore undescribed. They appear either as free amorphous particles of a reddish-brown colour, varying in size from mere specks to particles as large as pus-globules, or as cell-like bodies, with an oblique, ovoid, well-defined outline, within which lie masses of red or orange pigment, often very unequally distributed. When the celloid is stuffed, as it were, with the pigment, it loses its transparency, and appears almost black in the field of

[1] Am. Journ. of Med. Sci., April, 1869, page 357.

the microscope. The celloids vary in size from less than that of a blood-globule to a superficies as large as that of a pavement epithelium cell.

These pigmentary particles keep badly in urine, and disappear altogether when decomposition sets in; they are not confined to any particular state of the urine, and Dr. Roberts has not discovered that they have any precise pathological signification, and is unable to explain their presence. They are especially abundant when there is a copious shedding of epithelium into the urine. Dr. Roberts has found exactly similar bodies in the brain, in the vicinity of old apoplectic clots, in the neighbourhood of old extravasations in other places, in encephaloid growths, and other tumours. Dr. Ransome, of Bowdon, has found them in the condensed (by freezing) breath of all persons. Dr. Roberts has regarded these objects as derivatives of hæmatin, but how they come to assume their peculiar forms he cannot conjecture.

The account given of paroxysmal or intermittent hæmaturia is excellent, and the course of the disease is illustrated by the notes of five cases. As regards the treatment, Dr. Roberts thinks that the evidence is strongly in favour of quinia and iron as the most effective medicinal agents.

Under the heading "Albumen," the author has introduced Prof. Vogel's recently proposed method of accurately estimating the quantity of albumen in the urine.[1] The process, however, is too complex and troublesome for ordinary use.

For the quantitative analysis of sugar in the urine, two methods are given—the volumetrical, as perfected by Fehling, and the fermentation. The former is, we think, the preferable in that the analysis can be finished in a few minutes, whereas the fermentation method requires twenty-four hours for its completion. The main obstacle in this country to the more general use of the volumetrical method is the difficulty of procuring pipettes accurately graduated, either to grains or minims; those which are ordinarily sold in the shops being notoriously inaccurate. We were, some time ago, so fortunate as to have made by Mr. Pile, of the cor. of Passyunk Ave. and Catharine St., Philadelphia, some pipettes graduated to minims, which we can confidently recommend for their accuracy. The advantage of using pipettes graduated to minims is, that we are thereby enabled to calculate the number of grains of sugar in minims, instead of grains, of urine.

The volumetrical analysis as modified by Pavy[2] is, we think, an improvement upon the method given by Roberts, and is, in outline, as follows: The test solution to be used is composed of sulphate of copper 320 grs. Tartrate of potash (neutral) 640 grs. Caustic potash (potassa fusa) 1280 grs. Distilled water 20 fluidounces. 100 minims of this solution are just decolourized by half a grain of grape sugar; therefore the number of minims of urine necessary to decolourize 100 minims of this solution must contain one-half a grain of sugar, and, as there is one-half a grain of sugar in this number of minims of urine, it is easy to calculate how many grains there are in 480 minims (one fluidounce). By multiplying the figure representing the amount of sugar per fluidounce of urine by the coefficient .23, the quantity of sugar may be reduced to a percentage proportion.

Concerning the fermentation method, it is gratifying to know that Dr. Hensley[3] has recently investigated its accuracy and finds that the rule arrived at, experimentally, by Dr. Roberts—namely, that one degree of density lost in fermenta-

[1] Deut. Archiv für Klin. Med. 1867.

[2] On Diabetes. 2d ed. p. 26.

[3] St. Bartholomew's Hosp. Rep., vol. iii.

tion corresponds to one grain of sugar per ounce of urine, agrees very closely with the theoretical result obtained by calculation.

The recent observations of Dr. Dickinson on the morbid anatomy of diabetes mellitus (see No. of this Journal for April, 1870, p. 539) are introduced into this edition.

Donkin's skim-milk treatment of diabetes[1] has not been successful in Dr. Roberts's hands. "I have seen," he says, "several patients who have tried this severe method. Few of them could tolerate it except for a few days—and those who continued longer were rapidly reduced. Three chronic cases I know of, in which the treatment was obstinately persevered with, died from exhaustion." Bromide of potassium, prussic acid, and Calabar bean, the author has found useless, and peroxide of hydrogen and ozonic ether he has also tried, "only to find that the hopes held out with respect to them were altogether delusive."

In the treatment of diabetes insipidus, it is stated, that the application of the constant galvanic current has recently been tried with a promise of success. In Dr. Seidel's[2] case thus treated, "in 8 days, the urine had fallen from 5957 c. c. to 4600 c. c., and after three weeks to 2300 c. c., and next month to 1904 c. c. Simultaneously the weight of the body increased by nine pounds. The amendment was found to be maintained at the end of three months." Another case similarly treated and with like success, by Erb, of Heidelberg, is referred to.[3]

The true pathology of chylous urine, Dr. Roberts believes is to be sought for in the lymphathics of the urinary channels; and that the real analogues of the disease are to be found among those curious cases of chylous and lymphous discharges from the cutaneous surface, of which a number of examples have been published of late, and one by Dr. Roberts himself. (See No. of this Journal for July, 1871, page 186.)

In the article on amyloid degeneration, we regret not to find a detailed statement of the recent and admirable researches of Dickinson,[4] on the etiology and pathology of this disease: in the work of a contemporaneous English writer this omission seems inexcusable.

The book, however, is a good one; indeed we do not know of any systematic work on urinary and renal diseases in which they are treated so correctly and thoroughly as in the one now before us. I. M. H.

ART. XXVIII.—*The Heart and its Diseases, with their Treatment.* By J. MILNER FOTHERGILL, M.D., M.R.C.P. 8vo. pp. x., 382. London: H. K. Lewis, 1872.

DR. FOTHERGILL, while admitting that there are already a great many excellent treatises on Diseases of the Heart, seems to think that the advances made in physiology during the last few years have made room for at least one more. He certainly exhibits in his work a very fair acquaintance with the discoveries of recent French and German investigators, but we see no reason why he should claim in this respect any great advantage over Walshe or our own countryman, Flint. His arrangement of subjects is, moreover, not nearly

[1] Am. Journ. of Med. Sci., April, 1872, p. 498.
[2] Schmidt's Jahrb., Bd. 130, p. 97.
[3] Med. Times and Gaz., vol. i., 1868, p. 327.
[4] Am. Journ. of Med. Sci., April, 1864, pp. 458 and 491.

so systematic as that of the authors just alluded to; his style is diffuse and rather heavy, sufficiently so to prevent the book from ever becoming a recognized text-book. There are in addition many evidences that it has been hastily prepared for the press, and it is rarely that we have occasion to read a book which contains so many typographical errors. Some of these are almost ludicrous; thus we have emphysema for empyema; locomotor artery for locomotor ataxy; fremissement ectaire for fremissement cataire; mediastrium for mediastinum; nitrate of amyl for nitrite of amyl, etc. The names of authors are quite as frequently incorrectly as properly spelled.

The work is, however, not by any means devoid of merit, and we propose in the following brief notice to lay before our readers the author's views in regard to some points of the pathology of heart disease, and especially in regard to hypertrophy. This, as well as valvular disease, the author says, very frequently arises in those whose occupation obliges them to use much physical exertion, and in the following way: The muscles of the body largely cross the arteries, and, when in action, constrict them and impede the flow of blood through them. In this condition of muscular activity the circulation of the blood through the capillaries of the muscles is also interfered with. The obstacle thus offered to the arterial flow, if constantly renewed, soon causes hypertrophy of the left ventricle, and then the blood is forced into the aorta under greater pressure, while its progress is hindered, and the aorta is in consequence excessively distended and recoils forcibly, driving together the aortic valves under unwonted pressure. This in time evokes valvulitis, with its changes. But this obstruction to the flow is not all the mischief in these cases. While the muscles obstruct the arterial circulation they aid materially in accelerating the venous flow. This leads to the accumulation of the blood in the great veins and in the right cavities of the heart, the walls of which, to overcome the impediment in the pulmonary circulation caused by the difficulty with which the left ventricle disposes of its contents, become hypertrophied. The blood is now driven into the left ventricle under increased pressure, and dilatation is added to the already existing hypertrophy; further hypertrophy then supervenes, and a condition of dilatation of the left ventricle with decided hypertrophy is established. From the left ventricle again a large quantity of blood is thrown at each systole into the aorta, and a condition of over-distension of it kept up; this adds further to the strain and to the consequent valvulitis.

The descriptions of the lesions, symptoms, and treatment of endocarditis and pericarditis present no peculiarity, and therefore do not seem to demand any special notice. We find, it is true, one or two inaccuracies; thus we are told that the murmur of aortic constriction is exactly simulated in time and position by the anæmic bruit, and it does not seem to us that the points of distinction between pericardial friction sounds and endocardial murmurs are so clearly indicated as they might have been. After speaking of the difficulties which occasionally surround the diagnosis of a pericardial murmur, the author alludes to the fact that the "to-and-fro" character may not be pronounced enough to determine the question, and calls attention to the usual seat of the sound, as differing from that of any of the murmurs originating within the heart, and also to the plan recommended by Dr. Chambers of applying the ear to the stethoscope, finding the murmur, and then withdrawing the ear gradually from the stethoscope, retained *in situ*, noting the persistence of the murmur. He seems not to be aware that friction sounds are not heard elsewhere than in the præcordial region or propagated in the course of the large arteries as are the endocardial murmurs. We are acquainted with no better distinctive signs

between these two classes of sounds than these, and are surprised that Dr. Fothergill has entirely omitted all mention of it.

The treatment of hypertrophy, dilatation, and valvular diseases of the heart is discussed in a separate chapter. Dr. Fothergill is well known as an advocate for the administration of digitalis in all cardiac maladies in which it seems desirable to increase the force of the heart's contraction. He even goes so far as to deprecate the fear of its cumulative action, attributing to this fear the occasional discontinuance of the medicine before it has exerted its full influence upon the heart. Belladonna possesses, he thinks, some of the properties of digitalis, and may sometimes be given to supplement it, and this is also true of scoparium and squills. All these agents increase ventricular contraction, and are indicated whenever the heart is acting feebly, because—1. More perfect ventricular contraction causes a larger bulk of blood to be thrown into the arteries at each systole. 2. This produces more perfect arterial distension. 3. This, in the elastic arteries, leads to more perfect recoil. 4. The aortic systole is the propelling power into the coronary circulation, and more perfect recoil leads to improved coronary circulation; and 5. This conduces to more perfect nutrition of the heart itself.

A large portion of the book is devoted to the discussion of the relations existing between diseases of the kidneys and those of the heart. The author adopts the views of Dr. George Johnson in regard to the existence of hypertrophy of the walls of the arterioles in Bright's disease. This condition of the small arteries renders necessary an increase of the propulsive power of the heart, and hence we frequently have hypertrophy of the left ventricle present at some time or other during the continuance of this disease. Unfortunately this hypertrophy soon gives place to dilatation, which in its turn tends to produce fresh lesions of the kidneys. Diseases of the heart, originating from other causes, are, moreover, in the author's opinion, a frequent source of cirrhosis of the kidneys, in consequence of the congestion which they produce, giving rise to an increased growth of connective tissue.

The concluding chapter is devoted to the consideration of "The Elements of Prognosis in Heart Disease," but our limits will only allow us to say in regard to it, that it contains many valuable suggestions.

In the chapter on "Nervous Diseases of the Heart," Dr. Fothergill introduces, in a highly complimentary manner, a long extract from Dr. Da Costa's admirable article on "Irritable Heart," which appeared in the number of this Journal for January, 1871. The book contains several illustrations, the best of which is a wood-cut, showing the outline of the percussion dulness of the heart, taken from Von Dusch's book. J. H. H.

ART. XXIX.—*Cancerous and other Intra-thoracic Growths, their Natural History and Diagnosis:* being the substance of the Lumleian Lectures delivered before the Royal College of Physicians of London, by JAMES RISDON BENNETT, M.D., Fellow, Senior Censor, and Representative of the College in the General Medical Council; Consulting Physician to St. Thomas's Hospital, etc. With five plates. 12mo. pp. viii., 189. London: J. & A. Churchill, 1872.

INTRA-THORACIC cancer, though comparatively rare, is of sufficiently frequent occurrence to render its clinical history and diagnosis a study of practical importance to the physician. The remark of Stokes, concerning cancer of the

lung, made some thirty years ago, "that as yet almost nothing has been done in establishing the diagnosis of this disease," is no longer true, and the literature of the subject has since then been enriched by Mr. Stokes himself, and other distinguished observers.

In the book before us, Dr. Bennett has tabulated thirty-nine cases of intra-thoracic cancer, and a study of them shows that the middle periods of life are those in which the disease appears to be most commonly met with; that the encephaloid is the most frequently occurring form of the disease, and the scirrhous the least. Irrespectively of mediastinal tumours, or such as originate in the bronchial glands, all the pulmonary tissues may be the seat of cancerous disease—the investing serous membrane, the substance of the lungs, and the bronchi; so that the leading symptoms may present the characters either of pleuritic, pneumonic, or bronchial disease, and their results.

The diagnosis of intra-thoracic growths is still shrouded in difficulty. All attempts to lay down precise rules for their differential diagnosis based on the physical signs alone, have appeared to Dr. Bennett, little more than waste of time. Indeed almost every case presents peculiarities of its own; and this great diversity of symptoms constitutes the principal difficulty in diagnosis.

It is in the early stages that the symptoms of intra-thoracic cancer are most obscure. The cancerous cachexia is frequently absent until a very late period, or even throughout the whole course of the disease, when the disease has not extended to other organs, particularly those of digestion. Failure of appetite without sufficient assignable cause, and gradually increasing and often marked debility, with quickening of the pulse, are noticed. Then in many cases there is detected evidence of bronchial irritation (and this, whether the lungs have or have not been early implicated) and cough with or without expectoration. The next earliest symptom given by our author is dyspnœa on exertion, which like the cough may early assume a paroxysmal character. On the other hand, the patient may for a long time be quite free from any local subjective symptom even though the growth may have attained to a considerable size.

Physical signs will in most cases be wanting altogether until the disease has made considerable progress, and when the lungs are invaded, physical examination will not always tell us of the fact, nor even whether it be by fluid or by a solid mass that the pleural cavity is filled. A low temperature is usually considered to characterize cancer, but our author finds that increase of temperature may attend the rapid growth of miliary or diffused cancerous deposits. The progress of cancerous disease Dr. Bennett states to be always continuous. Intra-thoracic growths are occasionally met with, which are not cancerous in their nature, but which, during life, are not easily distinguished from cancer. "Scrofulous enlargement of the bronchial gland, hydatid disease, enlargement of the thymus and thyroid glands, have all been mistaken for cancer."

From this bare outline the reader will perceive the difficulty of determining the presence of intra-thoracic cancer, especially in its early stages, and he will appreciate the laudable effort of Dr. Bennett to define the natural history and diagnosis of these growths. But we must not mistake difficulties for impossibilities. "In every instance," Dr. Bennett says, "we must take into careful consideration the history of the case and the order of succession of the phenomena, together with the existing physical signs, and it will generally be found that these do not harmonize with any of the more ordinary forms of disease. By a vigorous application of the principle of exclusion we may often come to a tolerably confident diagnosis even in cases presenting great complexities and difficulty." I. M. H.

ART. XXX.—*Manual of Human and Comparative Histology.* Edited by S. STRICKER. Assisted by J. ARNOLD, E. BRÜCKE, COHNHEIM, E. KLEIN, W. KÜHNE, MEYNERT, and others. Translated by HENRY POWER, M.B., London, F.R.C.S.; Senior Ophthalmic Surgeon to St. Bartholomew's Hospital, etc. Vol. II. 8vo. pp. xviii., 555. The New Sydenham Society, London, 1872.

THE issue of this translation has been anxiously looked for not merely by those of the profession who are familiar with the English language only, but also by many who under ordinary circumstances can battle with the German. For much of the original of the portions contained in this volume is unusually difficult—particularly the chapter by Meynert on the structure of the brain. But there are other and better reasons for satisfaction than those named; for we have thus placed at our disposal an additional instalment of what is at once the most extended and valuable treatise on histology which has yet appeared.

Our obligations to The Sydenham Society and to Mr. Power are very great, and we feel certain that the issue of the entire treatise will mark an era in the history of medicine which will be the beginning of a greater familiarity by the mass of physicians with this important fundamental subject of medical science.

The first paper of the Sydenham Translation, constituting Chap. XVIII. of Stricker's treatise, is upon the *Liver*, by Ewald Hering, Prof. of Physiology, in the Josefs-Akademie in Vienna. Each lobule of the liver is compared to a "raspberry on its stalk," the penetrating stalk corresponding with the *intralobular* branch of the *hepatic vein*. In the liver of man the lobules are but imperfectly separated by the connective tissue prolongation of Glisson's capsule, which make the lobules of the pig's liver so distinct; hence, in man, also, the mass of each hepatic lobule is, throughout a great portion of its periphery, continuous with its neighbouring lobule.

The *Larynx* and *Trachea*, by E. Verson, are the subjects of Chap. XIX., and the *Lungs*, by Franz Eilhard Schulze, of Chap. XX. It is very difficult to present from actual preparations a clear account of the minute structure of the lung, while the variety of terms applied to the same portion serve to increase the difficulty of a correct understanding. We do not think the author is peculiarly happy in his exposition of the subject, though, as is generally the case in this excellent treatise, his results are based on his own observations. According to Schulze, the smallest bronchi, usually presenting a diameter of from 0.3 to 0.2 of a millimetre, and even in the smallest animals not less than 0.1 of a millimetre, open into the *respiratory cavities*. These are cylindrical passages, terminating cæcally, after dividing dichotomously at acute angles, from two to four times, at a distance of 2-4 millimetres from each bronchial extremity. They present funnel-shaped terminal processes, and similarly pedunculated short lateral branches, both of which, on account of their constricted entrance and wide base, are termed *infundibula*. These respiratory passages do not, like the bronchia, possess uniformally thick, solid walls, but are beset with numerous small polyhedric cavities, with rounded angles and borders, that are in immediate contact with each other, and opening into the lumen of the passage are called the *alveoli*. The passage thus formed by the walls of the closely arranged alveoli, and in a small degree by the free borders of their septa, he terms alveolar canals or passages. These correspond to the *intralobular bronchial ramifications* of Addison, the *lobular passages* of Todd, and *intercellular passages* of Rainey. The paper is illustrated by beautiful drawings of silver-stained preparations, in which the epithelium of the alveoli is beautifully mapped out.

Chap. XXI., on the *Kidneys*, by C. Ludwig, is an excellent paper on the subject, but contains little not previously published. The existence of the looped tubes of Henle, so long a matter of doubt with some histologists, is here accepted, and may be considered a well-determined point in the minute anatomy of this organ, which seems now completed.

In Chap. XXII. the *Adrenals, or supra-renal capsules*, are treated and well illustrated by C. J. Eberth, and the *Bladder* and *Ureters* briefly in Chap. XXIII., by Heinrich Obersteiner, of the Physiological Institute of the University of Vienna.

The *Testes*, including the different forms, movements, and development of the spermatozoids (erroneously printed spermatozoa), by v. La Valette St. George, and the structure of the *Ovary* and *Par Ovarium*, an elaborate paper by Waldeyer, form the subjects of Chaps. XXIV. and XXV.

Chap. XXVI., by Alfred Biesiadecki, Professor in Cracow, treats of the *Skin*, *Hair*, and *Nails*. There are few subjects on which ideas are so vague as that of the different forms of the organs of touch. This author acknowledges three forms of touch organs. 1st., the Pacinian or Corpuscles of Vater, composed of the exterior of a sheath formed of concentric capsules of connective tissue, in the middle of the cavity of the innermost of which the axis cylinder of the nerve terminates with one or several finely granular terminal bulbs. The nerve medulla fills this cavity, "forming either a finely granular mass or an irregularly and coarsely coagulated body, that appears dull in comparison with the nerve medulla, but, like it, assumes an intense violet-black colour when treated with solution of chloride of gold." In close proximity to the nerve a large bloodvessel penetrates the corpuscle and forms a close capillary plexus between the outer capsules.

2d. The tactile corpuscles (corpuscula tactûs) of Meissner and Wagner. These are *oval* corpuscles, contained in certain broad and slightly elevated papillæ, equalling the latter in length and having a diameter of 0.02 to 0.045 of a millimetre. "These are conspicuous for their rigid aspect and their transverse striation, which is partly owing to the presence of fine lines, and partly to fusiform transversely placed highly refractile nuclei. A medullated nerve fibre inclosed in a sheath, containing many nuclei, runs sometimes to the lower pole, sometimes as far as the middle, and sometimes even to the extremity of the corpuscle, frequently winding once or more times round the corpuscle, which is constricted at these points. The nerve at length suddenly loses its medulla, and is no longer capable of being traced."

3d. The corpuscles of Krause are inferred as admitted from the following paragraph forming a part of the description of the corpuscles of Meissner and Wagner: the nerve sheaths "are again, by a few observers, considered to enter a cavity within the tactile corpuscle, and to end by free extremities after the fashion of the corpuscles of Krause, that are elsewhere found." No further description of these corpuscles is given, however, and thus again the matter is not clearly presented.

Chap. XXVII., on the *Serous membranes*, is from the pen of the skilful histologist, Dr. E. Klein, now of London. The serous membranes are described as composed, in general, of an endothelium and a basement membrane or matrix, with lymphatics, bloodvessels and nerves.

This author also treats of the *External generative organs of the male and female, with their glandular appendages*, in Chap. XXIX., while Chap. XXVIII., by C. Langer, is on the *Mammary glands*.

But perhaps the most important as well as the ablest papers are those concluding the volume, on the *Spinal cord*, by J. Gerlach, of Erlangen, and the

Brain of mammals, by Theodore Meynert, of Vienna. The latter is a most laborious and apparently exhaustive paper. It would be impossible, however, in the short space of a notice, to give any clear idea of either subject, and we are compelled to refer the reader to the original papers.

Chap. XXXII., on the *Sympathetic System of Nerves*, by Dr. Sigmund Mayer, concludes the volume. J. T.

ART. XXXI.—*Clinical Lectures on Diseases of Women.* By Sir JAMES Y. SIMPSON, Bart., M.D., D.C.L., late Professor of Midwifery in the University of Edinburgh. Edited by ALEXANDER R. SIMPSON, M.D., Professor of Medicine and Midwifery and the Diseases of Women and Children in the University of Edinburgh. 8vo. pp. xxiii., 789. New York: D. Appleton & Co., 1872.

IN the No. of this Journal for July, 1863, p. 188, will be found an elaborate review of a volume entitled "Simpson on Diseases of Women," which comprises a series of clinical lectures, delivered by Sir James Y. Simpson, at the Royal Infirmary of Edinburgh, and which were published in the *London Medical Times* during the years 1859, 1860, and 1861. These lectures were collected and published in book form by Blanchard & Lea, in 1863. The volume now before us, edited by his nephew, who succeeded Sir James in the chair of midwifery in the University of Edinburgh, comprises all the lectures contained in the volume above referred to, together with the lecture "On the Diagnosis of the Diseases of Women," extracted, in full, from Sir James Simpson's Obstetric Works, edited by Drs. Priestley and Storer, and ten other lectures not previously published.

In the republished lectures a few verbal alterations have been made. At page 58, to the lecture on vesico-vaginal fistula, the editor appends a note, stating that Sir James, in his later operations "dispensed with the use of the wire splint, and closed the fistula simply by means of the metallic sutures;" and, "instead of cutting off the ends of the wire sutures, he tied them together in a knot, and left them projecting from the vulva, so that, when the speculum was introduced, the individual stitches could be easily seized with the fingers, and removed after the loop was clipped through." To the lecture on "Carcinoma of the Uterus and Mamma," another note is added, stating that "in some cases of carcinoma uteri, where there was no hope of eradicating the disease, and no possibility of excising the affected part," Sir James scooped out with his finger-nail, or curette, "as much as possible of the diseased mass." This is an interesting fact, in view of the importance which a recent contributor to the *American Journal of Obstetrics* (vol. v. p. 309), attaches to the treatment of cancer of the uterus with the curette. At pages 140, 141, and 154, additional tables have been introduced, showing the "mortality from cancer in England as regulated by sex," death from cancer in England (1847, 1861), and Scotland (1855, 1858), and "the percentage of cases of carcinoma uteri occurring at different ages."

Lecture VI., on Pelvic Peritonitis, is the first of the series of ten additional lectures. The lecturer assails the nomenclature of Virchow, and insists that the word Perimetritis inadequately and confusedly indicates the most usual seat of the inflammation. Whilst conceding to Bernutz the full measure of credit due him for his very valuable researches "into the nature of the affec-

tion," he differs from him in regard to the relative frequency of pelvic peritonitis and pelvic cellulitis, and maintains that the infrequency of opportunities to verify the existence of the latter is proof of its more common occurrence, than admitted by Bernutz, for "pelvic peritonitis," says Sir James, "is a much more serious and grave lesion, and one more likely to produce a fatal issue," than pelvic cellulitis. In regard to the pathological anatomy, symptomatology, physical signs, progress, termination, and etiology of the disease, he follows very closely Bernutz, though he lacks completeness and definiteness of description. He denies that metrorrhagia is "an invariable concomitant of the acute stage," and insists that when present "it has invariably seemed to do the patient at least temporary good." The following paragraph is in bad taste, and presents the differential diagnosis of this affection in an aspect entirely too uncertain and indefinite.

At page 112 the author says: "As I cannot, then, point out to you any one feature so salient as to guide us by its existence to immediately separate this from any other disease, it would be perhaps as well to abstain from attempting to do so at all, and, in fact, we see in an able work,[1] only recently published, how completely such an experiment has broken down. Dr. Thomas has drawn up a long series of differential points, of which it may be said that in some cases his statements would answer for both complaints, and that in many others they might be reversed without impropriety." Notwithstanding this slur the above paragraph is followed by quite an elaborate discussion of the diagnosis from pelvic cellulitis and pelvic hæmatocele, the only two diseases with "which it is likely to be confounded." There is nothing in the treatment to arrest attention; and passing over the intermediate lectures, which were noticed in the review previously referred to, we come to the second of this series, which is Lecture XLII. of the volume before us. This lecture is a very brief *résumé* of the causes and treatment of "rupture of the perineum," and is devoid of any special interest at this date.

Lectures XLIII., XLIV., and XLV., considered together, constitute a very complete and instructive discussion of "Fibroid Tumours of the Uterus," their varieties, situation, nature, symptoms, transformations, differential diagnosis, and treatment. In regard to their nature, Sir James accepts the views of Virchow, quoting approvingly the following passage from his Cellular Pathology. "We find, for example, that the extremely common form of uterine tumour, which has been designated fibrous or fibroid, has, in every respect, the same structure as the hypertrophied uterus has, inasmuch as it consists not only of fibrous connective tissue and vessels, but also of muscular fibre-cells." "The fibres, then," adds our author, "are simply those of ordinary connective tissue, and the nucleated fibre-cells are nothing more than the elements of involuntary muscle." Upon this view of their pathology, Sir James bases the assertion that great changes have taken place, in our opinion, in regard to their curability, and foreshadows yet greater advances in the future.

In regard to the various transformations which uterine fibroids are liable to undergo, and which Sir James seems to regard as spontaneous efforts at cure; he considers the carcinomatous as "altogether exceptional," but adds (p. 670): "If you had to do, indeed, with a patient of a cancerous diathesis, it is just possible that a uterine fibroid polypus might excite a kind of irritation in the uterus that would lead to the occurrence of malignant disease in it." He asserts, with great positiveness, that nature terminates many cases through the processes of fatty, cartilaginous, and calcareous degeneration, by expulsion

[1] A Practical Treatise on Diseases of Women, by Prof. T. GAILLARD THOMAS.

from muscular action, and spontaneous enucleation resulting from inflammatory changes. Frequently, immediately after parturition, the fibroid masses take on inflammatory action, becoming soft and œdematous, sometimes gangrenous and sloughy, and are finally eliminated or enucleated.

The symptomatology and differential diagnosis of fibroid tumours is very complete, and will well repay careful study. Though asserting that there is no "symptom pathognomonic of fibroid tumours of the uterus," his very graphic delineation of the group of phenomena brings out so distinctly the salient points, that we feel well assured few mistakes would occur in diagnosis if the lessons he inculcates were properly and more generally studied. In this connection we cannot omit to call special attention to the importance which he attaches to auscultation. At page 681, he says: "When we apply the stethoscope over an ovarian tumour, we hear no sound. On auscultating a fibroid tumour, on the other hand, we rarely fail to discover, on one or other side, a bruit precisely resembling the sound heard on auscultation over the pregnant uterus. . . . It may be very faintly discernible in the sub-peritoneal variety, but in the interstitial and submucous varieties . . . . the bruit may always be discovered on careful examination." The presence of the bruit distinguishes fibroid from ovarian tumours; and the absence of the sounds of the fœtal heart helps to distinguish it from the gravid uterus.

In regard to the medical treatment of these tumours the author presents "the threefold object of endeavouring, first, to promote the absorption of the tumour; secondly, to mitigate the symptoms to which it gives rise; and thirdly, to maintain or elevate the general standard of the patient's health." We regret that experience has not confirmed the value of bromide of potassium as a discutient, which Sir James so highly extols, yet the indorsement of its utility by such high authority demands further trial before it can be entirely discarded. Every gynæcologist should satisfy himself, by a fair trial, in accordance with the precise directions laid down by the author.

Under the head of surgical treatment, he discusses calcification by use of galvanism, gastrotomy and excision, enucleation, and removal through the vagina, and removal of portions of the tumour, detailing with marked preciseness the relative advantages of each process, and pointing out the character of the cases to which either may be adapted.

Lectures XLVI. and XLVII. present a very complete, though condensed, summary of the author's views in regard to the varieties, localities, and treatment of uterine polypi. The concluding portion of Lecture XLVII. is devoted to a brief description of leucorrhœa, in which the author displays his usual originality of thought and great practical application of the resources of medical science.

Lecture XLVIII. is a brief and unsatisfactory discussion of chronic metritis of the fundus, body, and cervix of the uterus. Chronic metritis of the body and fundus is very improperly, we think, divided into three varieties: Perimetritis, Endometritis, and Parenchymatous Metritis. This generalization leads necessarily to confusion and indistinctness; but that the reader may have the benefit of the author's views, we quote as follows from pages 736 and 737.

"When inflammation is set up in the upper segment of the uterus, it seldom, probably never, affects one of the layers of the uterine walls singly; but it may be found originating and producing its most marked effects in one of these layers at a time in preference to the others." . . . .

"When inflammation attacks the uterus, either in its serous covering or its mucous lining, it usually, also, invades to some extent the substance of its walls." In a vast majority of cases this is, perhaps, true, but if accepted in

its entirety it is simply nonsense to treat of perimetritis and endometritis as separate and distinct diseases from metritis.

Chronic metritis of the cervix is divided into the Catarrhal, Eruptive, Ulcerative, and the Hypertrophic. which is even more objectionable than the classification of the varieties of chronic metritis of the body and fundus, inasmuch as it necessarily implies that each variety is, to a greater or less extent, an affection of the parenchyma of the cervix.

The treatment of these affections, though containing many very valuable suggestions, falls far short of the requirements of the present day.

Lectures XLIX. and L., which conclude the series, are upon "Prolapsus Uteri" and "Retroversion of the Uterus." These are valuable as the opinions and practical conclusions of Sir James Simpson; and, at the time of their delivery were peculiarly valuable for their many original suggestions as to the proper treatment of these displacements; but, at this date, so many more recent authors have promulgated similar views, that they have lost much of their force, and experience has demonstrated the inutility, at least of one of his methods of treating retroversion and retroflexion. The intra-uterine stem pessary has been well nigh discarded, but it is due to Sir James to add that, in the concluding lectures, he has limited the class of cases to which it is applicable very much more than recent authors credit him with.

We, perhaps, ought not to omit calling attention to his distinction between Procidentia and Prolapsus Uteri. At page 752, in discussing the degrees of descent, he says: "In the first the descent is incomplete, and we have a case of procidentia uteri, the organ falling down so far that it has come to rest on the floor of the pelvis, and is ready to protrude through the vulva. In the second the disease is complete; the uterus has slipped over the edge of the perineum, is precipitated quite out of the pelvis, and has carried with it the upper extremity of the vaginal canal—the case is one of prolapsus uteri." Perhaps the editor and not Sir James is responsible for this transposition of terms.

The work, as now presented, is a very full and valuable treatise on Diseases of Women, containing, as it does, all the clinical lectures of the lamented Simpson, who, for a score or more of his later years, was regarded as pre-eminent in his special department of medicine, and whose teachings will be held in high esteem by those who live after him.

S. C. B.

ART. XXXII.—*The Anatomy and Development of Rodent Ulcer.* A Boylston Medical Prize Essay for 1872. By J. COLLINS WARREN, M.D. 8vo. pp. 66. Boston: Little, Brown & Co., 1872.

THIS slender and elegantly printed volume is one of much interest, and shows that the author worthily sustains the high reputation which has always pertained to the name of WARREN in American surgery. By careful microscopic study of several cases of rodent ulcer, observed in the wards of the Massachusetts General Hospital under the care of Dr. Hodges and of Dr. White, the author has satisfied himself of the correctness of the view adopted by Billroth and by the late Mr. C. H. Moore, that the disease in question is a true cancer, though the mildest and least malignant form of the affection with which the surgeon is called upon to deal.

We do not intend to follow Dr. Warren in his minute account of the morbid anatomy of the various specimens examined, and indeed without the aid of the excellent plates which accompany the essay, we should find it difficult to give our readers a distinct idea of the several points insisted upon: suffice it to say, that, in summing up his observations as to the *anatomy* of rodent ulcer, the author maintains that the existence of two forms of cutaneous cancer must be admitted, viz., (1) a large-celled or infiltrating variety—of which the ordinary epithelioma or epithelial cancer of the lower lip may be taken as a type—decidedly malignant both in regard to its rapid growth, and to its liability to infect the neighbouring lymphatic glands as well as more distant parts, and (2) a small-celled variety, which appears as a flat or superficial form of cancer, typified by the rodent ulcer, and characterized by a slow growth and by a very exceptional implication of distant parts.

With regard to the second part of his subject, the *development* of rodent ulcer, Dr. Warren says:—

"In summing up then the result of these observations, we find that in certain cases,

"1. The formation of the cancer-cells is preceded by an escape of the white blood corpuscles through the walls of the vessels, and an accumulation of similar cells in the adjoining lymphatic canals.

"2. That this is followed by an apparent transformation of these cells into cells resembling strongly the epithelium of the rete Malpighii.

"3. That the epithelium of the parts affected does not appear to take an active part in the process, but may exert a certain influence on the character of the formation taking place.

"4. That the cancer-cells lie in the lymphatic spaces of the connective tissue, and do not invade, to any appreciable extent, the lymphatic vessels. . . . .

"The cancer-cells, when once formed, appear to possess little power to multiply themselves by further proliferation. The masses of cancer-cells certainly do not show any signs of such activity. We find no evidences of an active cell proliferation, and consequently no active outgrowth into the neighbouring tissue. . . . In Rodent Ulcer, the cells rarely extend a line or two below the surface of the ulcer, and beyond its edges. The lymphatic vessels, as we have seen, are invaded at the most to a very limited extent, while in other forms of cancer the cells penetrate freely into the lymphatic net-work about them, and by repeated multiplication are enabled to continue their progress until conditions are arrived at most favourable for the infection of the adjacent glands. The low formative power of the elements, the absence of power to multiply themselves to any extent, when once formed, and their extremely short-lived character, seem to afford the most satisfactory explanation of the inability of the disease to affect distant parts."

The only portion of Dr. Warren's excellent essay which seems to us defective is his introductory sketch of the literature of the subject: we should be sorry to think with the author that the disease known as rodent ulcer is "still but very imperfectly understood by English and American pathologists," for, though undoubtedly much diversity of opinion has prevailed and yet prevails with regard to the microscopic appearances which characterize the affection, we know of almost no disease so rare as rodent ulcer, the clinical features of which have been so often and so distinctly laid before the profession, and concerning the treatment of which such unanimity of feeling prevails. Rodent ulcer has not indeed found a place in the majority of surgical text-books,[1] but

[1] Dr. Warren's reference to Holmes's "System of Surgery," appears to have been made to the *first* edition of that work; in the *second* edition we find rodent ulcer discussed in no less than four different places, and by as many writers: we may perhaps be permitted to mention also that, in our own work on the "Princi-

we should be loath to believe that the reading of either English or American pathologists was limited to works of that character: besides Dr. Arthur Jacob's original and in many respects still unsurpassed paper (which by some oversight is not even mentioned by Dr. Warren) in the fourth volume of the Dublin Hospital Reports, more or less full accounts of the affection have been published in our own language by such well-known writers as Cæsar Hawkins, Lawrence, Mackenzie, Moore, M. H. Collis, Paget, Hutchinson, J. Mason Warren, Durham, Holmes, Hulke, Arnott, and Soelberg Wells, so that, if the ignorance to which Dr. Warren alludes actually prevails, it is certainly inexcusable. J. A., Jr.

ART. XXXIII.—*Contribution à l'Étude des Tumeurs du Testicule*, par le Dr. G. NEPVEU, Ancien Interne des Hôpitaux de Paris, Membre de la Société Anatomique. Avec deux planches chromolithographiées, in 8vo. pp. 60, Paris: Adrien Delahaye, 1872.

Contribution to the Study of Tumours of the Testicle. By Dr. G. NEPVEU.

IN this slender volume the author, who is rapidly becoming well known as a frequent and able contributor to the *Archives Générales de Médecine*, gives an account of nine cases of tumour of the testicle, and adds full descriptions of the naked-eye and microscopic appearances in each case, the whole being accompanied by judicious remarks upon the morbid anatomy and pathology of the various growths described. Dr. Nepveu's nine cases are distributed as follows: one of "pearly tumour" (classed by Paget and others as a variety of the sebaceous cyst), one of epithelioma, three of encephaloid cancer, one of scirrhus, two of tuberculous disease, and one of fibroid alteration of the corpus Highmorianum. In his general summary, the author maintains that—

"1. 'Testicular pearls' originate from the testicular epithelium.

"2. Canalicular and cystic pavement-like epithelioma may coexist with fasciculate sarcoma and cartilaginous nodules.

"3. In spite of Rindfleisch's assertion, scirrhus may occur in the testicle.

"4. Cancer of the testicle attacks the testicular epithelium; at first and especially that of the canaliculi, then that of the lymphatics, and ultimately that of the bloodvessels.

"5. Tubercle of the testicle occurs under the three forms of *gray granulation*, which is rare, admitted by Virchow, but rejected by Rindfleisch, *fibrous tubercle*, and *disseminated tuberculosis*. The two first forms may be isolated, or may be joined together in large tuberculous masses."

The plates which accompany Dr. Nepveu's cases are well executed, and doubtless afford accurate representations of the morbid appearances described. J. A., Jr.

ART. XXXIV.—*The Influence of Vaccination, Age, Sex, and Occupation on the Mortality in Smallpox.* By ROBERT GRIEVE, M.D., Medical Superintendent of the Hampstead Hospital. (Read before the Epidemiological Society, 10th April, 1872.) 12mo. pp. 12. London: J. & A. Churchill, 1872.

IN this little pamphlet Dr. Grieve gives the statistics of a large number of cases of smallpox treated in the Hampstead Hospital during the recent epidemic;

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ples and Practice of Surgery," we have given a short account of the affection in question, and have referred to the various views entertained as to its pathology.

confining himself to the results of his own experience. From these statistics, his object is to show the influence exercised by vaccination, age, sex, and occupation, on the rate of mortality in smallpox.

That the mortality amongst those suffering from smallpox, who have been previously subjected to *vaccination*, is very much less than it is amongst those who are not so protected, is, at the present, probably sufficiently established; still, additional figures are not without their value. Of 6221 patients admitted, 1248 were without any marks of vaccination; of these, 638, or 51.12 per cent., died; whilst among the 4973 who showed proofs of being vaccinated, in only 567 instances did death occur, a mortality of 11.40. "The general percentage of mortality is 19.36, which is above the average of late epidemics. This has been ascribed by Mr. Marson, whose lengthened experience entitles him to speak on this point with authority—not only to the form of the disease generally, being more severe, but also to the large proportion of cases of the malignant and hemorrhagic type which have come under treatment." It is possible for individuals to be vaccinated, and yet not to obtain all the protection anticipated. The vaccination may be inefficiently performed, the matter employed may be inefficient in quality or in the quantity inserted. As to quality, when there are different observers with possibly different standards, it is very difficult to express the results by figures. Thus, while Dr. G. believes firmly that the character of vaccine virus exercises an immense influence over the amount of protection it imparts, he has been unable to bring statistics to confirm his belief. With quantity there is not the same difficulty: there are the marks, they may be looked for and counted.

"In the 3555 cases in which the number of marks was noted, it was found that the percentage of mortality among patients showing *one* mark was 17.39; *two* marks, 12.17; *three* marks, 10.58; *four* marks, 8.38; *five and more* marks, 6.43: a scale in which the mortality is in inverse ratio to the number of vaccine scars present." "The practical deduction to be made from these numbers is, that the larger the number of places at which we vaccinate, the greater is the protection furnished." To obtain even a fair average of protection, Dr. G. believes, "that at least three cicatrices are required, but that something is gained by exceeding that number."

As the result of his investigations in respect to the period of incubation of smallpox, Dr. G. has arrived at the conclusion that in the great majority of cases, the variolous eruption shows itself on the 14th day after infection. Hence, vaccination, during the first three or four days of the period of incubation, will be useful—a reason for the vaccination of all the inmates of a house where smallpox has already appeared.

Of smallpox *after revaccination*, Dr. G. has not seen much, owing, he believes, to the rarity of its occurrence. Out of the 6221, in only 3 could any satisfactory proof of previous revaccination be discovered. Many of the patients said, on their admission, they had been, but on further investigation, it was found that while the operation had been performed, no after effects were produced, the operator assuring them that as they were thus not susceptible to revaccination, there was no fear of their taking smallpox.

"Our nurses and servants," remarks Dr. G., "in constant and close attendance on the smallpox patients, when protected by revaccination, do not take the disease, and in this respect the experience at the Hampstead Hospital coincides with that at the older Institution at Highgate." "I wish it were possible," he continues, "to bring home to the minds and belief of the general public my conviction regarding revaccination, namely, *that it is a sure protection against smallpox*. To insure this protection, revaccination, producin

some local action, must have been performed after the individual had reached his 15th year."

The *extremes of age* are alike unfavourable in smallpox. Taking the unvaccinated class, amongst whom age is the chief modifying influence, we find the minimum mortality to be between the 10th and 20th years of age. Under 5, as many as 70.87 per cent. die, and 35.03 per cent. of those between 10 and 20. The percentage in those over 60, is so small as to possess but little value. Amongst the vaccinated the period of minimum mortality is also in those aged between 10 and 20 years, after that the increase in the percentage of deaths is proportionally greater than in the unvaccinated, thus rendering it probable that the protective power of vaccination becomes lessened by the efflux of time. Unvaccinated infants under one year of age rarely recovered. "It is worthy of note," says Dr. G., "that cases of smallpox of the hemorrhagic type, so common among adults during the recent epidemic, were seldom met with in children."

In respect to *sex*. More males than females were treated: namely, 3377 males, and 2844 females; of the former, 680, or 20.13 per cent., died, of the latter, 525, or 18.49 per cent.; showing thus a higher rate amongst males than females. This is the case both in the vaccinated and unvaccinated; but taking age in conjunction with sex, the lower rate of mortality is then, in females, limited, however, to adult life. Thus, of *males under* 20, and vaccinated, there were 1210, of whom 87, or 7.8 per cent., died. Of 491 unvaccinated males under 20, there died 251, or 51.12 per cent. Of 1103 vaccinated *females under* 20 years, 79 died, or 7.16 per cent. Of 410 unvaccinated, 225, or 54.87 per cent., died. Amongst 1506 vaccinated *males over* 20 years of age, 248, or 16.46 per cent., died; of 170 unvaccinated, 94, or 55.29 per cent., died. Of 1154 vaccinated *females aged over* 20 years, 153, or 13.35 per cent., died. Of 177 unvaccinated, 68, or 38.41 per cent., died.

This difference is probably, in part, owing to the extra wear and tear the male undergoes in his capacity of bread winner. Dr. G. is inclined to ascribe it mainly to the greater prevalence of irregular and dissipated habits among men than women. Nothing lessens the power to cope with smallpox more surely than a life of dissipation. The likelihood of an unprotected or an imperfectly vaccinated hard drinker recovering from an attack of genuine or modified smallpox is but slight.

By a table given by Dr. G., showing the amount of deaths that occurred in the patients ranged according to their different occupations, it will be seen that sedentary patients, contrary to what might have been expected, compare favourably with the others. The greatest mortality in smallpox occurs among individuals engaged in occupations whose workmen are confessedly most prone to intemperance, or are exposed to continuous high temperature. D. F. C.

ART. XXXV.—*Ueber ein Verfahren, die Einwirkung electrischer Ströme auf die Sogenannten Binnenmuskeln des Ohres zu untersuchen*, von Dr. LÖWENBERG, in Paris.

A Method of Examining the Action of Electric Currents upon the Muscles of the Middle Ear, by Dr. LÖWENBERG, of Paris. From the "Monatsschrift für Ohrenheilkunde." No. 8. 1872.

THE author of this little work says: Since the labor of Brenner, of St. Petersburg, gave us the constant electric current as a means of treatment in dis-

eases of the ear, numerous questions have arisen in the extended observations which the subject has claimed. Foremost among the recent controversies on this point, is the question whether the constant electric current acts upon the muscles of the middle ear, the tensor tympani, and the stapedius—and, if so, what are the effects? He says, very truly, that theoretical discussion on this point is useless, and that no method, excepting one which affords ocular proof that these muscles do contract under the application of the constant stream, will be of value.

Löwenberg, in the years 1864 and 1865, devised a method of producing contractions of the muscles of the tympanum by the application of electricity, and of rendering them visible by the use of the manometer.

A manometer consists of two parts, as is well known; the first being of cork or gutta-percha, which is made to fit hermetically into the meatus externus; and, secondly, of a glass tube of capilliary calibre, which fits hermetically into the part made of cork or gutta-percha, and shows by the altered altitude of a drop of coloured fluid in it, the fluctuations of the column of water in the meatus.

For the special purpose which Löwenberg had in view, a third part entered into the composition of the manometer. He passed a piece of copper wire through the gutta-percha stopper, the inner end of the wire extending into the fluid of the meatus, while the outer end is fastened to the connecting wire of the battery. By this means an electric current may be passed through the meatus while the manometer is in situ, and applied to the tympanum and its muscles, the circuit being completed by placing the other pole anywhere upon the surface of the body, or in the Eustachian tube.

If, during the passage of the electric current, only *one* of the muscles of the tympanum contracts, and an alteration in the curvature of the membrana tympani is produced, the fluid in the meatus externus must naturally undergo an alteration in its position, which will be communicated to the column of water in the manometer, which must fall if the membrana tympani is retracted, or rise if it is pushed outward. This method is just as applicable in the use of an induced current as it is in that of the constant stream.

The author at this point alludes to the recent discussion between Poorten and Wreden, whether a retraction of the membrana tympani occurs, in consequence of the action of an electric current upon the middle ear, or not. Wreden contends that such a retraction does occur, which is denied by Poorten. The question may, perhaps, be decided by the use of Löwenberg's manometer. If the membrana tympani is retracted, the manometer, properly adjusted, must indicate it, and such a retraction, it is fair to presume, must be caused by the contraction of the muscle which regulates the movements of the hammer and the membrana tympani, viz., the tensor tympani rather than the stapedius muscle. Such a contraction may take place and be followed by a retraction of the membrana tympani, and still the acoustic nerve may be *directly* affected by the current of electricity, and not indirectly by the contraction of the tensor tympani muscle, and a consequent inward movement of the chain of ossicles; a question which may be decided, at least in special cases, as Löwenberg remarks in his brochure under consideration, by the application of the electric current to an ear where the ossicles have been destroyed, an experiment in which the interest would be enhanced were the other ear of the individual perfectly sound, so far at least as the integrity of the chain of ossicles and the tensor tympani muscle is concerned.

As a conclusion to this notice of "Löwenberg's method," it is interesting as

well as fitting to consider the part that Brenner and others have acted in the labours pertaining to electro-otiatrics.

Brenner is the first man who has endeavoured to establish a rational system of electro-otiatrics, and in 1868 published his famous work on the subject, entitled, "*Untersuchungen und Beobachtungen, über die Wirkung electrischer Ströme auf das Gehörorgan im gesunden und kranken Zustande.*" Leipzig, 1868.

From this book we learn that among the earliest investigators, Volta made a single experiment to discover whether sound sensations could be produced by the galvanic current—obtaining an affirmative result—but failed to enter very far upon this kind of investigation.

He was followed by Ritter, who established all that Volta had described, and added a description of the note and its pitch, which is produced by an electric current passing through the organ of hearing; showing that this note became higher when the copper pole was in contact with the ear, and lower when the zinc pole was in the ear.

Grapengiesser was the next observer in this field, about 1801, but after his observation nothing was done till Paul Erman, in 1812, tried to prove that it is impossible to produce a true galvanic reaction of the acoustic nerve. From this time on through forty years, no independent and important investigations were instituted in this department of science, and men like E. H. Weber and Ludwig only mentioned the labours of previous observers, especially those of Ritter, in order to condemn their results, until a living authority, no less than Adolph Fick, says, in his *Lehrbuch der Physiologie des Menschen*, Zweite Auflage, 1858, "it is still undecided whether we are able to produce a specific reaction of the acoustic nerve, or even any reaction whatever in it, by the application of an external excitant, whether it is of a chemical, thermic, or electric nature." Thus the history of investigation into the nature of the excitation of the acoustic nerve, extending over seventy years previous to the time of Brenner, closes with this strange remark: "It is not yet determined *whether*, nor is it known *how*, the nerve of hearing reacts under the influence of the electric current." (Brenner, *op. cit.*, p. 45.) With Brenner, however, a new era in this department of science began, and in the present day the so-called normal formula established by him, for expressing the electric reaction of the acoustic nerve, is used as the standard of our knowledge on this point.

His doctrines have been accepted and put into practice by Hagen, of Leipsic, and Erb, of Heidelberg, both of whom have contributed largely to the literature of the subject. Benedict, of Vienna, has attacked all that Brenner has done, and denied the truth of most of it.

It would seem, however, to one who has looked into the subject of the application of the constant electric current to the ear, and the consequent reaction of acoustic nerve, that Brenner and his assiduous co-labourers have the best of it, because they are nearest the right; Benedict's statements are mostly made dogmatically, and give one the impression of perhaps originating in a desire for opposition and controversy. He surely shows no array of experiments equal to those on the other side, nor can he produce an equal number of controlling experiments performed by others.

Both parties claim to have produced a pure electric reaction of the acoustic nerve, but are totally at variance as to its nature; in fact are nearly diametrically opposed as to the mode of producing it, as well as its manifestation. Brenner and his party believe the reaction to be produced by a direct influence of the stream of electricity upon the acoustic nerve, whereas Benedict asserts

that the acoustic manifestations, when they occur, are reflex in their nature, a point which Erb has shown to be untenable.

Benedict's reflex theory has been based on suppositions of irritation of the trigeminus, vaso-motor nerves, and other parts entering into the structure of the ear, which has given rise to many diverse ramifications of experiment, among which we may place that of Wreden, alluded to above.

We can but express our hope that Löwenberg's suggestions may be listened to, and aid in the elucidation of the facts and the vindication of the truth.

C. H. B.

ART. XXXVI.—*New Treatment of Venereal Diseases and of Ulcerative Syphilitic Affections by Iodoform.* Translated from the French of Dr. A. A. IZARD, by HOWARD F. DAMON, M.D. Small 8vo. pp. 73. Boston: James Campbell, 1872.

WE have examined this little book with a good deal of interest and pleasure, and gladly recommend it to the attention of our readers. So far as we can judge, Dr. Izard appears to be a very intelligent, and, which perhaps is rarer, a perfectly candid observer; he claims no more for his favorite remedy than he seems able to justify by his clinical records, and, by wisely not attempting to prove too much, predisposes his readers to accept his conclusions, which indeed appear to be perfectly well founded.

Although both Dr. Izard and his translator have used iodoform internally, it is as a topical remedy only that it is considered in the volume now under consideration, the preparations recommended in addition to the drug in substance (in the form of a powder), being an ointment, and a solution in glycerin and alcohol (iodoform two or three parts, glycerin thirty parts, alcohol ten parts). The author's conclusions, which we repeat seem to us to be fairly sustained by the evidence adduced, are expressed in the following sentences:—

"1st. That iodoform is a therapeutic agent producing more certainly and more promptly than all the others ordinarily employed the cicatrization of ulcerative syphilids [*sic*] in general, under whatever form they present themselves.

"2d. That in the treatment of soft chancre, iodoform is in some sort a specific by the promptness with which it produces cicatrization without pain.

"3d. That in the treatment of simple or virulent buboes (non-syphilitic), iodoform can be employed in the form of an ointment, as a resolvent, during the early stage, with more success than the blister and tincture of iodine; during the period which succeeds to the opening of the bubo, no other medicament can be compared with it for the rapidity with which it brings about the cure.

"4th. In all the preceding cases, when the suppuration is abundant, it is preferable to commence the treatment by the solution of iodoform in glycerin and alcohol; iodoform in powder ought to be employed in the second place.

"5th. Iodoform acts not only as a topical agent, but still further as a local anæsthetic. The rapid cicatrization which takes place is due, 1st, to the simplicity of the dressing which does not irritate the diseased parts; 2d, to the absorption of the secretions by the iodoform powder; 3d, to the antiseptic properties of the medicament, above all, when it is dissolved in alcohol and glycerin; 4th, to the presence of iodine which acts favorably on all venereal ulcerations in general.

"6th. Iodoform appears to us to be completely incapable of arresting the progress of phagedenism.

"7th. The employment of iodoform in cases of syphilitic affections should never dispense with internal treatment."

Barring a little stiffness and a few awkward Gallicisms, Dr. Damon's translation is, upon the whole, pretty well done; as a matter of taste we should prefer to see upon the title page the *author's* name in not so very much smaller type than the *translator's*. J. A., Jr.

ART. XXXVII.—*On Spurious, Feigned, and Concealed Pregnancy.* By THOMAS MORE MADDEN, M.D., M.R.I.A., etc. 12mo. pp. 17. Dublin, 1872.

SPURIOUS pregnancy embraces those cases in which so many of the signs of pregnancy are present as to easily deceive the inexperienced female, especially when the desire for maternity is predominant with her. In some rare cases, in fact, the diagnosis is so obscure, at first, as to deceive, for a time, even the experienced obstetrician.

The causes of spurious pregnancy are very numerous. Among these may be enumerated "change of life," as it is popularly termed, dyspepsia, dropsy, obesity, and a variety of others. Two of the most interesting of the causes are molar pregnancy and uterine hydatidiform disease. Pregnancy may also be simulated by cystic degeneration of an ovum. In all the instances of uterine hydatidiform and cystic disease which have come under the notice of Dr. M., the patients supposed themselves pregnant until they were undeceived by the expulsion of the hydatidiform mass from the uterus. Pseudo-pregnancy may also be caused by ascites, by fibrous tumours of the womb, by physometra, by hysteria, and some other morbid conditions of the uterus. Ovarian tumour may be confounded with pregnancy, or may exist with it. The diagnosis of such cases is, in the opinion of Dr. M., comparatively easy. It may be arrived at by palpation of the abdomen, and by the state of the os and cervix uteri, which latter in ovarian disease is long and low down, while the uterus can be distinguished as a separate body from the ovarian tumour.

The histories of nine cases are given in illustration of the views advanced by Dr. M. on the subject of spurious pregnancy.

Little need be said on the subject of *feigned pregnancy* which may be resorted to as an agent of fraud, to extort money, to excite pity, or to escape or defer the punishment of crime. "I would desire," says Dr. M., "to call attention to the fact that the practice of concealing pregnancy, with the intention of committing child-murder, or of producing abortion, especially the latter, it is to be feared is becoming, of late years, more common in Dublin than was formerly the case." "Illegitimate births are more frequent in Ireland now than formerly. But this increased proportion of illegitimate births gives by no means a full measure of the extent to which the evil just referred to has arrived of late years—with the deluge of cheap *bad* literature which is poured into this country, and which circulates chiefly among the class that constitute the majority of the unmarried patients of the lying-in hospitals, a still greater evil has become familiarized to the oftentimes badly reared and sorely tempted victims of seduction, who too often seek what they *falsely* conceive a legitimate mode of escaping the penalty of their folly." Hence it now becomes more than ever necessary for every medical practitioner to be prepared to meet with cases of concealed pregnancy and attempted abortion under various disguises, and thus be able to detect the intention and to frustrate the crime. D. F. C.

ART. XXXVIII.—*Remarks on Strictures of the Urethra of Extreme Calibre, with Cases, and a Description of New Instruments for their Treatment.* By F. N. OTIS, M.D., Clinical Professor of Venereal Diseases in the College of Physicians and Surgeons, New York, etc. 8vo. pp. 25. New York: D. Appleton & Co., 1872.

IN this pamphlet, which is a reprint from the pages of the New York Medical Journal, Prof. Otis justly lays stress upon the evil consequences which may result from slight strictures, and properly points out that an instrument which may suffice very well for the treatment of a close stricture, or of a stricture in a small urethra, may yet be utterly unfitted for employment in cases in which the passage is naturally large, and the contraction but moderate. For dealing with such cases, the author has devised a special instrument, which he calls the "dilating urethrotome," by which the stricture is first stretched and rendered tense, and subsequently divided by means of a concealed blade which can be projected at the will of the operator. For the treatment of very tight strictures, Prof. Otis employs a modification of Sir H. Thompson's probe-pointed catheter (here by a slip of the pen called Mr. Holt's), the stylet being made to pass to the end of the instrument, the catheter itself being slightly conical in shape, so as to effect dilatation as it is pushed onwards, and the flow of urine being assisted after the introduction of the instrument by the adaptation of a small syringe to its projecting extremity.

J. A., JR.

ART. XXXIX.—*A System of Oral Surgery: being a Consideration of the Diseases and Surgery of the Mouth, Jaws, and Associate Parts.* By JAMES E. GARRETSON, M.D., D.D.S., Oral Surgeon to the Medical Department of the University of Pennsylvania, etc. Illustrated with numerous steel plates and wood-cuts. 8vo. pp. 1091. Philadelphia: J. B. Lippincott & Co., 1873.

THE chief object of the author seems to have been to ascertain how big a book he could possibly make on the somewhat limited subject which he has chosen for discussion. He has, accordingly, bestowed all his tediousness upon the reader, by giving in minute detail the histories of numerous very commonplace cases, adding a brief record of his views upon the treatment of such diverse affections as tetanus, urethral stricture, typhoid fever, gonorrhœa, and cholera infantum, and further swelling the bulk of his volume by frequent and lengthy extracts—one occupies more than twenty pages—taken bodily, sometimes with and sometimes without acknowledgment, from all sorts of writers, good, bad, and indifferent; indeed there appears to be scarcely any modern surgical author, except Prof. Gross (whose name is conspicuous by its absence), who has not been forced to contribute a quota to this "System of Oral Surgery."

Many of these extracts are, no doubt, very good reading; and we do not mean to say that the author has added absolutely nothing of value. In a volume of nearly eleven hundred pages, it would be strange if all were bad, and it would be unjust to deny that we have read with some interest a few of the clinical histories, and the chapter on Obturators. But, as a whole, Dr. Garretson's production forms one of the most objectionable specimens of book-making

which it has ever been our fortune to meet with. The statements of facts, or of what are given as such, are in many instances laboriously inaccurate, the pathology is consistently superannuated, and the style ungrammatical, turgid, and bombastic; the illustrations, moreover, are, with comparatively few exceptions, taken from the catalogues of manufacturers of dental instruments, or from familiar text-books (almost invariably without acknowledgment), while the whole is set off with a few of those famous steel plates, which were originally engraved ("after Bernard and Huette," etc.) for Prof. H. H. Smith's Surgery, and which recently seem to have been served up *à toutes sauces*, in every work in which they could possibly be inserted.

We have examined Dr. Garretson's volume with a good deal of care—more, perhaps, than it merits—and have marked between three and four score passages which, if quoted, would amply sustain the justice of our criticisms; but we shall not weary our readers by going through the work in detail and minutely pointing out its numerous defects. To the author, as he reveals himself in this book, may be justly applied the words, slightly altered from the Johnsonian original:—

"Qui nullum fere *chirurgiæ locum*
Non tetigit,
Nullum tetigit, *sed* quod non ornavit."

J. A., Jr.

ART. XL.—*A Manual of Chemical Physiology, including its points of contact with Pathology.* By J. L. W. THUDICHUM, M.D. 8vo. pp. vii., 195. New York: William Wood & Co., 1872.

THE eminent author of this work states in his preface that "it is a complete but concise epitome of the branch of science commonly termed Physiological or Animal Chemistry, and will be found to contain its latest acquisitions."

The first of the two parts of which the work consists, an essay on Chemical Physiology, presents in a condensed form those theories at present received, and the observations from which they have been deduced, and though this condensation, and the author's somewhat difficult style, make the book what may be termed a "hard" one, it will undoubtedly prove a valuable acquisition to the resources of the student of animal chemistry.

The second part, termed the "Analytical Guide," is a series of concise directions for use in the laboratory. The mode of isolating each substance, of recognizing it when obtained, and, whenever possible, of preparing the same substance in a pure state for purposes of comparison, is clearly and accurately set down. For the satisfactory use of much of this part, prior experience in chemical manipulation is very necessary; but there is also much which can be readily carried out by any one who possesses a little common sense, a few general principles, and a piece or two of simple apparatus.

It is to be regretted that the real value of this work can be practically recognized by so few in this country; but we hope that with increased facilities for the study of such matters in laboratories, the student of medicine may cease to regard the hours spent in physiological and chemical lecture-rooms merely as means to obtaining a degree, and may learn to feel that what is taught there is to have an important practical bearing upon his future as pathologist and therapeutist, or, in other words, as a good practising physician. As a handbook in such laboratories, this guide will be found very valuable. H. B. H.

ART. XLI.—*A Manual of Qualitative Analysis.* By ROBERT GALLOWAY, F.C.S. From the fifth rewritten and enlarged London edition, with illustrations. 12mo. pp. 402. Philadelphia: H. C. Lea, 1872.

THAT this work has reached its fifth edition, shows the estimation in which it is held by those for whose use it was intended, and in its enlarged and modified form it is well calculated to familiarize the student with the theories and new chemical notation, while it indoctrinates him in the facts of chemical reaction and research. The special plan of the work in the part devoted to analysis is to combine the principles embraced in each portion with the instructions as to the methods by which the objects of the research are to be effected. To the student who pursues his course without an instructor this has the advantage of compelling attention, not only to the means of research, but also to the reasons for each particular method being strictly followed, instead of allowing him to neglect the rational portions, when from previous education of the mental powers, he does not recognize this necessity and tends to fall in routine practice.

The work is divided into three parts: inorganic, organic, and operative, the last being much the shortest. The position of the third part is out of the usual course and seems misplaced, the student being required in previous portions to perform operations for which no previous instruction has been given, and to use reagents of which he has no information—upon the reliability of which for the purposes directed he can form no opinion.

The first part contains the mode of research for the bases first and then the acids, with the reactions characteristic of each, with tables of comparison in which the narration of the characters of the various bodies are placed in regular order alongside of each other, so that their similarity or differences and the knowledge to be gained from the characters of their reaction may be more readily perceived. Without preliminary remarks on the bases or reactions on which the group is founded, they are introduced by an enumeration of the general properties of each group, and the actions of the reagents to be employed, which are again repeated in the tables of comparison before mentioned; this is followed by directions for the separation and detection of the several members of the group and the precautions which require attention in operating with members of the particular group under examination; the properties of the metals and their compounds are next passed in review, and remarks appended on individual members of the group with reference to special or additional tests. Each group has appended a series of exercises in the form of questions, which are so framed as to test the knowledge of the student and the attention which has been applied to the explanations and their accurate comprehension.

The acids are divided into inorganic and organic, and enumerated separately with the reactions they produce with reagents. They are next thrown into groups, the same number, four, for both divisions, the discriminating behaviour with reagents being first stated, and then succeeded by characteristic tests for each member of the group. Preparation of the substances for examination, with instructions for preliminary examination of liquids and of solids by heat applied in different ways, without or with adjuvants, and whether fixed or volatile and capable of forming films, are next considered; and this portion is concluded by instructions as to effecting the solution of solids, so as to adapt them for analysis, arranged under three divisions, in which considerable additions have been made to the observations contained in former editions of this work.

Part the second is occupied with analysis of organic substances not previously noticed, divided into groups—albuminoid, saccharine, basic, acid, etc.—

under which the properties of the substances included in each are considered with their reactions. Methods of analyzing the blood, urine, and other animal secretions, of ascertaining the character and presence of the saccharine group, and of the principal organic alkalies, are given with accuracy and sufficiently in detail for identification. The conclusion is occupied with the detection of the poisonous alkaloids in organic mixtures.

The third part contains the usual preparatory manipulations of a mechanical and chemical character, together with methods of preliminary testing, apparatus, and instructions concerning the purity and strength of the test solutions with which the experiments detailed in the previous portions of the work are to be performed. The appendix contains instructions on the treatment of residues of the more valuable metals—silver, gold, and platinum—so as to utilize what would be otherwise waste products. R. E. B.

ART. XLII.—*Annual Report of the Surgeon-General United States Army.* 1872.

THIS report gives the average strength of the army during the fiscal year ending June 30th, 1872, as 24,101 white and 2494 coloured troops.

Among the white troops 47,575 were reported on the sick list, being 1974 per 1000 of mean strength, of which number 1671 were on the sick list from disease, and 7310 for wounds, accidents, and injuries. The total number of deaths was 367, of which 268 were from disease, and 99 from wounds, injuries, and accidents. Discharged on "Surgeon's certificate of disability," 846.

Among the coloured troops the total number of cases was 3514, or 1409 per 1000 of mean strength, of which number 2938 were cases of disease, and 576 were wounds, accidents, and injuries. The number of deaths was 54, of which 44 were from disease, and 10 from wounds and injuries. The number of discharges on "Surgeon's certificate of disability" was 76.

The first part of the Medical and Surgical History of the War is, we are pleased to learn, in a state of forwardness, and awaits the action of Congress for its distribution. It is to be hoped that early action will be taken in this matter.

The library of the Surgeon-General's office now contains 19,000 volumes and 7000 pamphlets conveniently arranged in the fire-proof building of the Army Medical Museum, and open to the public under regulations the same as those of the Congressional Library.

There are at present 59 vacancies in the medical corps, and the Surgeon General says: "My previous reports have called your attention to the large number of vacancies existing in the Medical Corps, and the injury to it, and the service, resulting from the prohibition of appointments and promotions. It would require many years to fill the vacancies now existing, as the number of successful candidates rarely exceeds eight or ten in any one year. This is not the greatest evil, for many of the best of our medical officers, having the advantage of the large experience of the late war, disheartened by the faint prospect of advancement, are resigning; and numbers of most desirable candidates, after waiting years for examination, have established themselves in civil practice."

It is by no means creditable to the government that so meritorious and important a class of officers as the Army Surgeons should be so inadequately provided for that but little encouragement is given to them to continue in the service, or for thoroughly educated men to enter it.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Glycogenesis.*—The late Nos. of the *Revue Scientifique* contain a *résumé* of a very interesting course of lectures "On the Phenomena of Life common to Animals and Plants," delivered by M. Claude Bernard at the Muséum d'Histoire Naturelle de Paris. Notwithstanding their somewhat general title, these lectures are almost entirely devoted to the subject of Glycogenesis, the mystery of which has been so greatly elucidated by M. Bernard himself. The first lectures were occupied in describing the various forms of sugar, the tests indicating the presence of glycose, and the mode in which the quantity of that substance present in any fluid may be estimated. He himself always employs Barreswil and Fehling's fluids; but observes that the aldehydes, uric acid, leucin, hypoxanthin, mucus, cellulose, tannin, chloroform, and chloral, all act in reducing copper in the presence of strong alkalies like glycose, and consequently their absence must be ascertained before any conclusions can be drawn in regard to the amount of glycose in any fluid. He draws with a master hand an outline of the successive steps by which our present knowledge has been attained: how the sugar shown to exist in the blood was originally believed to be entirely derived from without; how by feeding a dog for weeks exclusively on lean meat it was concluded that it must be found within the economy; how by comparative analyses of portal and hepatic venous blood the liver was shown to play an important part in the process; and how by the demonstration of sugar in water transmitted through the liver after the vessels had been thoroughly cleared of blood that organ was proved to possess, not a mere converting power on some saccharine compound contained in the blood, but the capability of producing an amyloid substance, which, under the influence of some ferment—such as that produced by the pancreas—is susceptible of conversion into glycose, and is thus fitted for the nutrition of the body. Further research showed, as all the world now knows, that this substance was insoluble, and M. Claude Bernard applied the name of "glycogen" to it. In his eleventh lecture he criticises Dr. Pavy's views, and maintains, in opposition to that experimenter, that the formation of *sugar* is not a post-mortem change, but a function of the liver, the sugar during life being instantaneously carried off by the blood, though accumulating in the organ after death. The ready passage of the saccharine substance into the blood is, he points out, materially facilitated by the peculiar relations of the hepatic veins to the hepatic cells, and by the action of the muscular coats of the walls of those veins. The nerves of the liver come from three sources: the sympathetic, the pneumogastric, and the phrenic; the branches of the latter supplying the muscular coats of the veins. And M. Bernard tells how he was led, from the analogy of salivation being

induced by pricking the root of the fifth, to try the effects of puncture of the fourth, ventricle, though it was by a mere accident that he discovered its action, the first animal experimented on being rendered highly diabetic, though no effects were produced in the following six or seven. The increased production of sugar in this case M. Bernard attributes partly to an increase in the activity of the circulation, and partly to the direct action of the sympathetic system on the hepatic tissue.

As regards embryonic life, glycogen appears at a very early period in the embryo and its membranes: sometimes, as in the Rodents, existing between the maternal and fœtal portions of the membrane; sometimes, as in the Ruminants, being found on the internal surface of the amniotic membrane. Towards the close of intra-uterine life it diminishes in the membrane and accumulates in the fœtus. In the bird's egg sugar exists in notable quantity, and is contained in the white: if fecundation do not occur, it rapidly disappears; but if impregnation is effected, the vitellus quickly becomes charged with glycogen—the several tissues, with the exception of the muscles, becoming charged with it towards the close of incubation.

Amongst the invertebrata glycogen is widely distributed; and M. Bernard shows the fact, interesting to gourmands, that oysters, crabs, lobsters, and fish, when in prime condition for eating, contain abundance of glycogen; whilst, when out of condition, as when moulting (in the case of crabs), or when allowed slowly to die by asphyxia, the glycogen is entirely used up.

In giving his final conclusions, M. Bernard states that he has been led to regard glycose ($C_{12}H_{12}O_{12}$) as the pivot on which the whole subject of glycogeny turns. It is, he says, both the primitive substance and the final substance in a long series of ascending and descending changes, and it can undergo various progressive or retrogressive modifications. Neither starch nor cane-sugar is of the least value; but the glycose formed in the economy, if not required, can be stored up in the form of glycogen, which can again, when the wants of the system demand it, undergo ready conversion into glycose. The precise mode in which this last is applied in the process of nutrition is still a matter that requires investigation.

The whole subject of glycogenesis is a striking example of what may be done by patient "questioning of nature;" and there can be little doubt that subsequent researches conducted in the same spirit as those undertaken by this distinguished physiologist will hereafter furnish us with complete information of the part played by every kind of aliment, of the modifications each undergoes in the process of assimilation, the mode in which it is applied in the processes of nutrition, and, finally, the retrogressive changes it undergoes before being discharged from the body as effete and exhausted material.—*Lancet*, Nov. 23, 1872.

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2. *Cutaneous Absorption.*—In the *Moniteur Scientifique* for September, M. PAPILLON gives a sketch of what has recently been done on this subject, from which we take the following summary. It has long been well known that liquid substances and essences are readily absorbed by the skin. The question as regards solids is more difficult, and has given rise to much discussion.

M. Roussin, of Val-de-Grâce, maintained some years ago that alkaline iodides could be absorbed by the skin if incorporated with fatty matters. From baths containing these salts he found no absorption, but if the skin was rubbed with a pomatum containing them, iodine was afterwards found in the urine. A dry shirt, which had previously been dipped in a solution of iodide of potassium, occasioned absorption in the wearer; but M. Roussin explained this by saying that a pomatum of iodide was really formed with the fatty matters of the skin.

M. Rabuteau vigorously refuted these conclusions. He pointed out that in both cases, of the iodised pomatum and of the shirt, iodine was set at liberty. The salt was decomposed by ozone and by the acids of the perspiration, and iodine was absorbed in the state of vapour. The proof that fatty matters had no part in the phenomenon was, that, if the pomatum was prepared with bromides, which are less easily decomposed than iodides, there was no absorption,

no bromine found in the urine. Further, M. Rabuteau found no trace of iodine in the excreta, after remaining more than an hour in a bath containing 100 to 150 grammes of iodide of potassium; nor any absorption when a like experiment was made with bromide of potassium or sodium. But taking a bath in which he had put a solution containing 50 grammes of bromide of potassium and 5 grammes of iodine, he afterwards found iodine in the urine and saliva. The iodine, in a state of vapour, had been absorbed by the skin.

It is known, moreover, that many substances, very dangerous, but not volatile—such as bichloride of mercury, digitaline, etc.,—in a state of solution in a bath, have no hurtful action on those who take such baths. Doubtless an absorption commences in course of time, but it is very small, and only when the skin has become well impregnated, as the experiments of MM. Rabuteau, Reveil, Homolle, and others prove.

While a bath containing a considerable quantity of corrosive sublimate does not excite any action, simple friction with a mercurial unguent, on the other hand, produces absorption largely and readily, followed by the symptoms of hydrargyrism, salivation, etc. This is due to the fact that while the sublimate is a fixed salt, metallic mercury is a volatile substance, giving off vapours at all temperatures. M. Merget's recent experiments have thrown new light on this extraordinary and subtle volatility of mercury, and furnish at the same time a very delicate means of detecting the smallest quantities of this metal. The subject is at present being prosecuted by an able Paris pharmacist, M. Byasson.

It seems, then, to be established that volatile substances are always absorbed, immediately and largely, by the external tegument, in the state of vapour; also, that fixed substances are absorbed very little, and only after a long time; but when, through decomposition or contact with the skin, they give rise to volatile substances, the latter are immediately absorbed.—*Lancet*, October 5, 1872.

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3. *Effects on Secretion of Chemical Changes in the Blood.*—Evidence appears to be accumulating showing that some at least of the changes which take place in the various secretions of the body, under the influence of different drugs and remedial agents, are due to or associated with changes taking place in the blood-corpuscles. The papers of MM. Binz and Geltowsky, which have lately appeared in the *Practitioner*, upon the action of quinia on the white corpuscles of the blood, supply important evidence upon this point; for they show that, when added in comparatively small proportions, quinia arrests the amœboid movements these corpuscles are capable of performing, and probably have a powerful influence in checking their development and multiplication in the lymphatic and vascular glands.

The experiments of M. Ritter, of which an abstract is given in a late number of the *Revue des Cours Scientifique*, point in the same direction. M. Ritter seeks to show what chemical modifications are produced in the different secretions, and especially in the urine, by the introduction into the system of certain agents known to have an action on the blood-globules. The substances with which he experimented were oxygen, nitrous oxide, carbonic oxide, the salts of antimony and arsenic, phosphorus, and the soda salts of the biliary acids.

It might naturally be anticipated that the inhalation of oxygen would increase the activity of the combustion of organic compounds, and consequently augment the proportion of the compounds representing the ultimate results of that combustion contained in the urine. But, as if to show the unsatisfactory character of mere theory in explaining vital processes, the experiments of M. Ritter demonstrate that the inhalation of oxygen renders the urine more acid and increases the proportion of ammoniacal salts; and though it increases also the proportion of urea, as compared with the uric acid, it diminishes the absolute amount of urea, as well as the total quantity of nitrogen discharged by that fluid. A possible explanation of this is that a portion of the urea may be decomposed in the blood into water, carbonic acid, and nitrogen, which are eliminated by the lungs; and this is in accordance with the statements of Allen

and Pepys, as well as those of Regnault and Reiset, that rather more nitrogen is eliminated in the expired air by an animal that has been made to breathe pure oxygen than under ordinary circumstances. The greater acidity of the urine appears to be due to the presence of an organic acid, that M. Ritter believes is lactic acid, which it is known may proceed from the oxidation of nitrogenised substances. Muscular activity acts in nearly the same manner as inhalation of oxygen.

Before determining the action of *protoxide of nitrogen* on the urine, M. Ritter investigated its influence on the blood, and shows that this gas is dissolved by the blood in larger quantity than by the serum destitute of globules, but that all the gases—even carbonic acid and hydrogen—displace it easily, whilst its oxidising power is certainly feeble. On respiring protoxide of nitrogen, or drinking water charged with it, the quantity of carbonic acid expired diminishes; and in regard to the urine, the amount of urea, of uric acid, and of nitrogenised compounds generally, is augmented, but only in proportion to the amount of urine eliminated, which is itself increased. In fact, this gas produces diuresis.

The experiments of Claude Bernard have demonstrated that *oxide of carbon* deprives the blood-globules of their power of absorbing oxygen. On *à priori* grounds, therefore, the introduction of this gas into the system ought to check oxidation; and, in accordance with this, M. Ritter finds that after non-poisonous inhalations of carbonic oxide there is a constant diminution of urea and of the total nitrogen, and that there is especially a diminution in the proportion of urea to the total nitrogen.

The compounds of *antimony*, *arsenic*, and *phosphorus*, introduced into the body, occasion a diminution in the quantity of urea and of the total quantity of nitrogen; and, although there is an increase in the amount of uric acid, the urine is alkaline. The compounds of these metals or metalloids, taken in larger doses, cause disintegration of the globules and the formation of hæmoglobin crystals. The urine then contains albumen, colouring matter, bile, etc. If less doses be given, an increase of fat and of cholesterine is found in the blood and throughout the system. They are thus shown to be deoxidising agents.

As regards the biliary acids, M. Ritter states that the taurocholate of soda, injected directly into the blood, has an action analogous to that of phosphorus, but less energetic.

So far as they go, these experiments are interesting, and open up a wide field of inquiry, which may perhaps enable us to explain the action of many drugs which are at present shrouded in mystery.—*Lancet*, October 5, 1872.

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4. *Physiology of Vomiting.*—Experiments have lately been conducted by Herren, Kleimann and Simonowitsch, in Herrman's laboratory, to corroborate or overthrow the statement made last year by Grimm, that a longer time was required for tartarized antimony to act when it was injected into the veins than when it was introducedt into the stomach. The results they obtained fully support Grimm's observation. These experiments are, therefore, strongly opposed to the idea of there being, as some have imagined, a nervous centre from which the impulses occasioning vomiting proceed, for it would clearly be contrary to all analogy that a substance acting directly upon the brain should act more slowly and more feebly when injected into the blood than when it is gradually and imperfectly absorbed from the stomach. They maintain, on the contrary, that the salt acts on the peripheral extremities of the nerves distributed to the stomach, the specific action it possesses inducing vomiting. It seemed probable, if this view were correct, that, even when the salt was injected into the blood, only the portion circulating in the gastric walls, or contained in the secretion, was the really effectual substance in producing vomiting. To ascertain this, they tested the first material ejected in vomiting in a number of dogs into whose veins tartar emetic had been injected, and found that it always contained some of the antimonial salt. The fact that efforts to vomit may still occur after the stomach has been excised they do not regard as at all opposed to their view, since the salt may act on the peripheric extremities of nerves

supplying the œsophagus or intestine, which also may have the power of inducing vomiting reflectorially.—*Lancet*, Sept. 28, 1872.

5. *On Alcohol and Exercise.*—A further addition has recently been made by Dr. Parkes, of Netley, to the remarkable train of researches by which he has laboured to fix the true relations of food to nutrition and work. In these researches, commenced in December, 1866, Dr Parkes has had advantages which very few enjoy, and has used them with a skill and judgment which still fewer possess. He has been able to make his experiments upon soldiers accustomed to a monotonous life and rigid discipline, and in absolutely perfect health. He has been able to measure and analyze the ingesta and egesta with an accuracy never before attained in prolonged trials, and to fix the conditions of rest and exercise with perfect precision. The results he has obtained are equally valuable to physiology and pathology, and some of them tend to revolutionize our ideas on several important points.

To render Dr. Parkes's latest discoveries intelligible to our readers, it is necessary to give a sketch of the two lines of investigation which he has been pursuing, and which unite into one in the memoir which he presented to the Royal Society on the 25th of April last.

In the first of these he dealt with the question of the relation of work to muscular disintegration, which received such forcible illustration in the celebrated experiment made by Fick and Wislicenus in their ascent of the Faulhorn in 1865. In two series of experiments, made under different conditions, he confirmed the main conclusion arrived at by the Swiss professors—namely, that severe muscular work is not attended with any notable increase of muscular oxidation; or, in other words, that the work is not done at the expense of the muscles. But a wider generalization than this appeared to arise from the experiments, and Dr. Parkes arrived at the conclusion that the metamorphosis of tissue was absolutely *diminished* during muscular work and increased during rest. It is clear that this view illustrates the common experience that the muscles grow by exercise and dwindle in inaction, and that increased nitrogenous food is required for hard work—the addition being wanted, according to Dr. Parkes, for the increased nutrition of the muscles. This unexpected conclusion was assailed by Voit, of Munich, who maintained that no alteration in the excretion of nitrogen took place either during or after work, and ascribed the results obtained by Dr. Parkes to inaccurate measurement of the ingested nitrogen. Dr. Parkes replied in 1871 by some experiments, of which one may be quoted as to all appearance conclusive as against Voit:—

A man was kept for some days on half the normal supply of nitrogen, and then for five days lived on food containing *no nitrogen* whatever. On the fourth day he did an extremely hard day's work with wonderful ease. Now on the first day of non-nitrogenous diet the excretion of nitrogen in the urine was 5.936 grammes. It sank day by day until it reached its lowest point (3.812 grammes) on the day of hard work. But on the fifth day, which was passed in rest, no less than 8.265 grammes of nitrogen passed in the urine.

Whether this experiment, which appears to dispose of Voit's objection, is equally conclusive in favour of Dr. Parkes's theory, may, however, be doubted, and the doubt is by no means cleared up by the author's last-published paper.

The other research to which we have alluded was commenced in conjunction with the late Count Wollowicz in 1870. It had for its object the determination of the effect of alcoholic drinks on the urinary and alvine evacuations, the temperature, pulse, etc. In the first series pure alcohol and brandy, and in the second claret of good quality, were used; and the results demonstrated several very important facts. The alcohol in each form was found to have substantially the same action on the system. No effect was produced on the excretions, for the nitrogen, phosphoric acid, chlorine and free acid all remained unchanged, even when somewhat large doses were given. The temperature also both of the axilla and rectum was not affected; the body-weight and the process of primary digestion did not vary; and the only certain effect of the alcohol during the time of the experiments (three to ten days) was to raise the pulse very materially, the work of the heart being increased by as much as one-fifth.

It appears clear from these experiments that alcohol in a healthy subject, and in moderate doses, does not affect the metamorphosis of tissue, for even the nervous tissues, if their metamorphoses can be measured by the phosphoric acid excreted, underwent no material change; and it can hardly be doubted that the frequent stimulation of the heart's action produced by alcohol in such subjects as the men experimented upon by Dr. Parkes is solely injurious.

We now come to Dr. Parkes's last research, in which the effect of alcohol on work is investigated. This research is in some respects the best of the series. To nearly all the others the objection of Voit was to some extent applicable—namely, that there was no absolute certainty as to the quantity of ingested nitrogen. But Dr. Parkes was fortunate enough this time to find a man—a Scotchman—who was able to live and work for sixteen days on oatmeal, milk, salt, and water, without suffering in health or strength, or even without losing more than two pounds in weight. Enough oatmeal for the whole experiment was first obtained, and was analyzed after thorough mixing. The milk was analyzed at the commencement of the experiment, and was every day diluted to a fixed specific gravity. The quantities were so regulated that the man received every day exactly 20 grammes of nitrogen. The experiment was arranged as follows: For six days the man remained as nearly as possible at rest. Then for three days he worked as hard as possible. Then followed three days more of rest, and then another three days of hard work; but this time he took, at ten, two, and six o'clock in each day, a dose of 4 fluidounces of brandy, the 12 fluidounces taken each day containing 5.4 fluidounces of absolute alcohol. Finally, for two days he rested. Throughout the five periods the food was constant, and the urinary and alvine evacuations were carefully collected, weighed, and analyzed. Many other observations were made, but we can only epitomize the results as regards the nitrogen. The average daily excretion, in grammes, of nitrogen during each period was found to be as follows:—

	In Urine.	In Fæces.	Total.
1. Rest	15.183	3.765	18.948
2. Exercise on water	16.274	4.981	21.255
3. Rest	15.850	3.251	19.101
4. Exercise on brandy	15.750	4.372	20.122
5. Rest	15.007	3.215	18.222

During the whole period the total nitrogen discharged each day was, on an average, 19.59 grammes, against 20 grammes ingested; so that there was a loss in sixteen days of about 7 grammes (108 grains).

It will be seen that these figures do not confirm, although they may possibly prove to be not inconsistent with, the theory which Dr. Parkes drew from his earlier experiments. Even taking the ureal nitrogen alone, the excretion is seen to increase instead of diminish during the first, and to remain stationary during the second, of the periods of work, and to fall off in each of the subsequent periods of rest. The figures show, however, that Voit was mistaken in supposing that no alteration took place in the excretion of nitrogen under either condition. In other respects the research has confirmed the author's previous conclusions, and even anticipations. The brandy did not affect either of the excretions. It increased the heart's action, and that was all. The man not only found that the brandy did not help him in his work, but that it hindered him materially. The first dose did neither good nor harm; but the second made him hot and thirsty, produced palpitation of the heart, and on the third day he found himself "obliged to stop from time to time, because, to use his own words, 'of his breathing not being so good.'"

We must pass by the many other interesting results of these experiments; but we cannot avoid an allusion to Dr. Parkes's concluding remark. He points out that in the face of these experiments it is hard to believe in the current theory of the depressing effect of alcohol on the pulmonary excretion of carbon. Considering that the work of the heart is increased by alcohol, and the metamorphosis of tissue is unaffected by it, it would rather appear probable that an increased oxidation of non-nitrogenous material, and therefore an increased excretion of carbonic acid, must take place to provide the force for the

extra work. The published researches on this subject are indeed by no means satisfactory, and we cordially agree with Dr. Parkes in wishing for new experiments. Perhaps Dr. Parkes himself, whose experiments have suggested the doubt, may be induced to supply the want. In doing so he would add materially to the deep debt of gratitude which every physiologist owes to him.—*Lancet*, Sept. 28, 1872.

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6. *The Localization of Brain-Functions.*—Meynert, one of the ablest of the modern students of the anatomy of the nerve-centres, has sought, by combining phrenological with clinical and pathological observation on the functions of the cortical layer of the cerebral hemispheres, to define to some extent the localization of the different functions in the gray matter of the cortex. He distinguishes five special functional centres. 1. The olfactory lobe or nerve, which, highly developed in animals well gifted with the power of scent, is almost atrophied in man, less highly endowed in this respect. 2. The walls of the fissure of Sylvius. These are in intimate relation with the power of speech, as is found in aphasia, which is the consequence of changes in them. 3. The occipital and temporal lobes. Anatomy shows the relations of these parts with the organs of the senses—the retina, labyrinth, and olfactory nerve. In cases of blindness and deafness rapidly developed, these lobes are the seat of evident alterations. The experiments of Flourens on the ablation of the cerebral lobes support this theory; for, if but little of the substance be removed, the senses are not much affected; but if the ablation be carried deeper, the sensorial functions immediately cease. 4. The frontal lobes. These lobes are the principal seat of motor excitation, as is shown by their anatomical relations with the corpora striata. Besides, in the forms of psychoses which are accompanied by extensive disorders of motility (general paralysis), these are the most atrophied of all the parts of the brain. The continued need of movement, the agitation of mania, are equally based upon change in the frontal lobes. 5. The cornu of Ammon. This organ plays an important part in the functions of motility, and almost always presents, in epilepsy, conditions of atrophy or sclerosis.—*Brit. Med. Journ.*, Oct. 19, 1872.

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7. *The Two Cerebral Hemispheres.*—Dr. Fleury, in a paper read before the French Association, compared the dynamism of the two cerebral hemispheres. Serre and Broca have for a long time pointed out the functional inequality of the two cerebral hemispheres, and a great number of clinical facts confirm their ideas. Gratiolet has observed the same inequality in the development of the brain in the fœtus. The left hemisphere excels the right. Dr. Fleury explains this functional inequality by the unequal distribution of blood in the cerebral hemispheres. Relying on the physical laws which regulate the course of the blood in the veins, and on the results of numerous measurements, he shows that the left hemisphere receives a more considerable quantity of blood than that which reaches the right hemisphere. The measurements taken of the jugular veins also confirm this opinion. Finally, we have to mention the agreement of a greater afflux of blood to the right superior limb.—*Brit. Med. Journ.*, Sept. 28, 1872.

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8. *Mode of Growth of Long Bones.*—Dr. Ollier, of Lyons, communicated to the French Association for the Advancement of Science the results of his recent experiments on this subject. The theory of peripheric growth, which he has held for a long time, has been lately combated by the learned German doctors, Wolff, Calmann, and Meyer, who are supporters of interstitial growth. M. Ollier has observed anew a great many times that two nails placed on the diaphysis of a bone, at an accurately measured distance, are separated by the same space when the animal, having become an adult, is sacrificed. In very young animals, there is sometimes a slight divergence, never exceeding more than a fourth of the whole length of the bone. This fact would seem to weaken the theory, if one did not know that very young, and in consequence soft bones, are under the general law of growth of soft tissues, of which the development is interstitial. A more considerable divergence of the osteoplasts in adult

bones has also been made an objection to the theory of peripheric growth; but the researches of Ranvier have demonstrated the variableness of these elements, and in consequence their utter uselessness in this question. When the cartilage of conjugation is removed, the growth of the bone is stopped, or at least diminished. Interstitial growth is observed occasionally in certain birds, and in some mammals; but in this last case the anomaly explains itself, because the bone, softened by inflammation, has taken the properties of the soft tissues. Moreover, this growth is never more than a very small fraction of the length of the bone, which is the seat of it. Passing from the normal to the pathological growth of bone, M. Ollier remarked that since 1867 he has shown that irritation of the diaphyses of a long bone provokes the lengthening of this bone; whilst the irritation of the cartilage of conjunction leads to the arrest of its development, and that not by the more rapid solidification of the epiphysis, but by a simple perturbation in the work of ossification. The clinic confirms the results of experiment. Another fact, which has great practical importance, is the inequality of the part of the two cartilages of conjugation in the development of bone. The humerus grows especially by the superior cartilage of conjunction; the radius and the ulna, on the contrary, by their inferior cartilage, in such a way that the constituent parts of the elbow are only of very slight utility in the general development of the superior limb. The reverse takes place in the articulation of the knee and the bones which form it. M. Ollier insists on the importance of these facts, because of the results that attend articular resections practised on children. He has observed since 1861 that, after resections of the elbow in young children, the superior limb continues to grow, whilst the inferior limb hardly grows any more after resection of the knee. The deformity which results from this stoppage of the development is more and more exaggerated as the fellow-limb continues its normal growth. After resections, as after certain inflammatory lesions, a growth lengthwise of the limb operated on is sometimes observed. This lengthening is not accompanied by hypertrophy of the bone; it becomes, on the contrary, lighter. Hence M. Ollier has called this growth the atrophic lengthening. M. Ollier explains this anomaly by the diminution of the pressure which the bones exercise on one another. The diminution of this pressure leads, in fact, to an atrophic lengthening. This it is easy to observe in the bones of a paralyzed limb, but without waiting for that general atrophy which soon succeeds the functional inertia of the limb.—*Brit. Med. Journ.*, Sept. 28, 1872.

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9. *Structure and Action of the Round Ligament of the Uterus.*—Notwithstanding the rather extensive literature that exists upon the subject of the Round Ligament of the Uterus, says Dr. E. L. SCHIFF in an article devoted to its consideration in the last part of Stricker's "Jahrbuch," there still remain several points to be cleared up. The round ligaments have long been known to contain both striated and unstriated muscular tissue; but considerable discrepancies occur in different authors in regard to the disposition of these fibres. The honour of being the discoverer of the round ligaments belongs to Carolus Stephanus, though they were first correctly described by the celebrated anatomist, Winslow. Meckel pointed out the presence of muscular fibres in them, though he only referred to the organic fibres continued upon them from the uterine walls. No less than sixteen authors have given detailed descriptions of the structure and relations of the round ligaments since Meckel's time. Amongst these Rosenberger may be specially mentioned as having distinguished three fasciculi of striated muscular fibres, of which two join with the fibres of the musculus transversus abdominis, one at the internal, the other at the external margin of the abdominal ring, whilst the third ends in a tendon that joins with the external limb of Poupart's ligament. A few other fibres, according to Rau, terminate in the mons veneris and vulva, whilst others are attached to the crista and symphysis pubis. As regards the function of the round ligaments, it was formerly held that they simply served to maintain the uterus in position. Rau, however, maintained that by means of their contraction the uterus was drawn down and fixed during the ninth month of pregnancy, keeping it in this position during the pains of labour. In this he was supported by

Velpeau, who had actually observed these contractions, and by Schweighhäuser, who had felt a vermicular movement in them in a case of inverted uterus. The pathological conditions of the round ligaments that have been noticed are: hypertrophy, which occurs not only normally during pregnancy, but in all cases of enlargement of the organ; hyperæmia and inflammation; dropsy and hydrocele; fibroid tumours and cysts; and, finally, contraction and atrophy, leading to anteversion and lateral displacement of the uterus, described by Martin. Schiff's own investigations show that the round ligament is a prolongation of the uterine wall below the Fallopian tube outwards, forwards, and slightly downwards towards the abdominal ring, through which it passes, becoming gradually broken up into fibres at its outer opening. It is composed of organic and transversely striated muscular fibres, connective tissue, elastic fibres, vessels, and nerves.

Commencing from the uterus, the first third of the ligament is, Dr. Schiff says, chiefly composed of unstriated muscular fibres, which are continuous with those of the external and middle layers of the uterine tissue, and for the most part run along its upper border. Striated muscular fibres first appear at the inner third, and, increasing in number towards the outer part, become continuous with the fibres of the transversalis abdominis. They are arranged in three fasciculi, which run along the upper border of the ligament, and sometimes form loops like the cremaster in the male—always, however, returning to the transversalis. The middle third of the ligament is very vascular, its looped and anastomosing veins recalling the plexus pampiniformis of the cord. The elastic and connective tissue fibres are continued through the abdominal canal into the aponeuroses of the abdominal muscles, the mons veneris, and the labia majora. During pregnancy Schiff finds that the round ligaments are about four times thicker than in the virgin state, and end in a kind of cone on the uterus, the line of demarcation between the two being altogether obliterated. The striated fasciculi have at this period also undergone great hypertrophy, and have coalesced to form a large muscle that can be dissected out with ease. The simultaneous contraction of the two ligaments therefore, he maintained, would cause a downward and forward movement of the fundus uteri. Their presence and action would maintain the normal anteversion of the uterus, whilst their relaxation would favour its retroflexion; and, finally, their downward pull during labour would be greater in proportion to the degree of ascent that the fundus uteri had undergone.—*Lancet*, Nov. 16, 1872.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

10. *On the Physiological and Therapeutical Properties of the Different Immediate Principles of Opium.*—In a long and interesting series of researches Dr. Rabuteau has extended the investigations of Claude Bernard upon the physiological and therapeutical properties of the constituents of opium. Dr. Rabuteau has examined these properties, not only as they affect the lower animals, but also the human subject, and he has, moreover, considered the alkaloids of opium in relation to their *anodyne* and *anexosmotic* effects. [By the word *anexosmotic* Dr. Rabuteau indicates the property of preventing the flow of liquid through the intestinal walls into the intestinal canal.—Reporter.] He has specially examined these two effects, because opium is very frequently employed to allay pain and to arrest diarrhœa; and he has not only examined the properties of the alkaloids of opium, but also those of the other constituents, such as meconic acid, meconin, etc. It is already well known that the activity of the immediate principles of opium is not the same in each; but Dr. Rabuteau shows, besides, a fact which was not previously known, namely, that the order of activity of these same principles is not the same in man and in the lower animals. He also demonstrates, by the evidence afforded by his own experi-

ments as well as by those of his predecessors, the principles of opium which cause sleep in the human subject, those which allay pain, those which arrest diarrhœa, and, lastly, those which act upon the system in a more energetic and dangerous manner when given in large doses. The principles which have been discovered in opium, and the order in which they are described by Dr. Rabuteau, are as follows:—*Basic principles.*—Thebaini papaverin, narcotin, codein, narcein, morphin, opianin, porphyroxin, pseudo-morphin. *Other principles.*—Meconic acid, meconin, water, caoutchouc, resin, fatty matter, gum, mucilage, and extractive matters.

The following are among the more important results of Dr. Rabuteau's researches on these substances:—*Thebain* produces, in the lower animals, violent convulsions, similar to those caused by strychnia, but in man it is far less poisonous than the latter alkaloid. In order to ascertain the *anexosmotic* properties of this and other principles, Dr. Rabuteau drew out from an aperture made in the abdominal walls of certain animals a knuckle of intestine, into which, after tying it, a solution of sulphate of soda was introduced, and then the intestine, tied at both ends, was returned into the abdomen, the animal having previously had a solution of thebain injected under the skin. In the case of this alkaloid the portion of intestine was examined after the death of the animal, and was found to contain a large quantity of fluid. Thebain, therefore, does not counteract the effect of purgatives, or, in other words, is not anexosmotic, and, consequently, is not an opiate preparation which produces constipation or arrests diarrhœa. Dr. Rabuteau thus summarises the properties of thebain:—It produces convulsions, and is poisonous in the lower animals, but is less active than strychnia; it is not very poisonous in man; it does not prevent the exosmotic currents of the intestine; it is not soporific, but it increases the anæsthetic effect of chloroform; and it is anodyne.

As it is impossible, from want of space, to specify the researches made by Dr. Rabuteau on each constituent of opium, we can only give his results, which are chiefly as follows:—*Papaverin* is much less active than thebain, and produces hardly any effect when administered in moderate doses to the lower animals, but in large doses it produces convulsions in frogs. In the case of the human subject it possesses but little activity in rather large doses, as, for instance, twenty centigrammes ($\frac{20}{1000}$ of a gramme, about fifteen grains being about equivalent to a gramme); but in larger doses it is poisonous, and causes convulsions; it does not arrest diarrhœa, or, in other words, it is not anexosmotic; it is not soporific, but it assists the anæsthetic action of chloroform. *Narcotine.*—With regard to this principle, Dr. Rabuteau confirms the results of previous observers as to its negative characters. *Codein* is more poisonous to man than thebain, but, on the other hand, according to the experiments of Claude Bernard and Dr. Rabuteau, thebain is the more poisonous to the lower animals. Codein is dangerous to man in large doses, it is very slightly soporific, very slightly anodyne, and is not anexosmotic, and, therefore, is useless in the practice of medicine. *Narcein*, according to Claude Bernard, is the most soporific of the bases of opium, and is less poisonous than thebain, codein, and papaverin; but Dr. Rabuteau, from his more recent researches, thinks that although narcein is more soporific in dogs than morphin, yet that in the human subject morphin is superior in this respect. Narcein augments the action of chloroform, and it is anodyne and anexosmotic. *Morphin* is the most poisonous and the most soporific of the principles of opium in man, but it is also the most anexosmotic, as has been proved by experiments similar to those related in connection with the properties of thebain. It is also anodyne, as is well known, but it presents this inconvenience, that it deranges the system by causing loss of appetite, nausea, and vomiting. The other principles of opium are of so little importance in medical practice that it is unnecessary to refer to them in detail.

Dr. Rabuteau concludes his paper with some observations on the simultaneous action of chloroform and the alkaloids of opium. It has been found that the lower animals were much less sensible to pain when they were subjected to the influence of chloroform and also the opiate preparations; thus, in cases where both agents were administered, the insensibility to pain remained, even

when the chloroform was no longer administered, and yet the animals did not sleep. The alkaloids of opium, therefore, generally continue the anodyne action of chloroform, although they are not all soporific, but they almost all possess the property of diminishing sensibility. Claude Bernard and Nussbaum have found that when an opiate subcutaneous injection was performed in certain cases of operation on the human subject, and chloroform was subsequently given, the patient did not awake as usual, but continued to sleep, and during this sleep there was insensibility to punctures, incisions, and even the actual cautery. Dr. Rabuteau, therefore, thinks that insensibility might be obtained with greater certainty and safety by the combined administration of a solution of chloroform and an opiate, than by giving either agent alone.—*Brit. and For. Med.-Chir. Rev.*, Oct. 1872, from *Gazette Hebdomadaire*, April and May, 1872.

11. *Bromal Hydrate.*—Dr. Berti and Namias state the following to be the results of the experiments made by them upon the use of bromal hydrate :—1. Even in small doses and suitably diluted this substance produces burning in the throat, pyrosis, vomiting, and diarrhœa. 2. It is best taken in an emulsion, but by long use, even in this combination, it produces vomiting and purging. 3. Even relatively large doses do not cause sleep, and do not tranquillize the patient. In epilepsy, bromal hydrate is useless, and only in one case, where bromide of potassium was abandoned, the hydrate cut short the attack. 4. Subcutaneous injections cause phlegmon, and produce besides no subsequent effects on the nervous system. 5. Rubbed up with an equal quantity of fat, bromal hydrate causes erythema when applied to the skin, but it differs in its injurious effects from sinapism in this respect, that this erythema is accompanied with deep-seated and very obstinate infiltration of the subcutaneous areolar tissue. 6. Even as a stimulant bromal hydrate possesses no superiority over similar agents, but is inferior to them in this respect, that it acts more slowly and its operation is less limited. 7. Poisonous doses produce death with sopor, paralysis of motion and sensation, and rapid or gradual cessation of the respiratory movements. Bromal is by no means to be employed as an internal or subcutaneous medicine, since it is more caustic than other agents. It is only when it is desirable to bring a large quantity of fluid to a particular part of the skin, as in cases when dry cupping-glasses are used, that bromal hydrate may be tried externally.—*Journal de Bruxelles*, April, 1871.

12. *The Antiseptic and Physiological Action of Silicate of Soda.*—MM. A. Rabuteau and F. Papillon, after briefly referring to the researches of Professor Dumas on the action of borax in fermentation, describe at length (*Comptes Rendus*, Sept. 30th) a series of experiments made with the view of ascertaining the effect of silicate of soda upon alcoholic fermentation, upon the fermentation of urea, upon lactic fermentation, and upon amygdalic fermentation. It appears that silicate of soda acts in a similar manner to borax, but far more energetically. Not only does it prevent fermentation, but it is a strong disinfectant; and its physiological action, when injected in the blood in aqueous solution (1 to 40), is fatal to animal life, while such is not the case with borax under similar conditions.—*Brit. Med. Journ.*, Oct. 26, 1872.

13. *Sulphate of Cinchonia as a Substitute for Sulphate of Quinia.*—M. Briquet read before the French Academy of Medicine, Oct. 1, 1872, a memoir on the employment of sulphate of cinchonia as a substitute for sulphate of quinia in the treatment of intermittent fevers and acute articular rheumatism. The author endeavoured to prove, contrary to the opinion of MM. Bouchardat and Michel Levy, that the sulphate of cinchonia is exempt from toxic properties. He further adduces numerous statistical investigations to prove that this salt, administered in solution in divided doses, so that the last dose should be given about twelve hours before the expected paroxysm, cures intermittent fevers in a great majority of cases, and that it is a certain febrifuge free from all ill effects, and possessing the great advantage of being less expensive than the sulphate of quinia.—*L'Union Médicale*, Oct. 3, 1872.

14. *Action of Atropia on Sweating.*—Mr. SYDNEY RINGER contributes to *The Practitioner* (Oct. 1872) some additional observations on this subject.

"Our observations," he says, "lead us to conclude that $\frac{1}{100}$ of a grain of atropia, injected hypodermically, is sufficient in most cases to check sweating for one night. Our observations are too few to determine whether after employing the injection on several nights the sweating can be relieved on discontinuing the treatment, but we believe that after a short course of this treatment the injection may be discontinued for a few nights without the return of sweating.

"This treatment gave the phthisical patients better sleep, and we think allayed their cough; but unfortunately in most cases it caused very uncomfortable dryness of the throat.

"Mr. Johnson assisted me in some experiments with stramonium. We found that, like belladonna, stramonium, subcutaneously injected, will very speedily check sweating, and produce dryness of the mouth. We noticed that while belladonna and stramonium check sweating, they deeply flushed the face. Hence their influence over sweating cannot be due to their effect on the sympathetic ganglia thereby lessening the supply of blood to the skin, unless they can affect the bloodvessels supplying glands, while they leave unaffected the other vessels."

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15. *Experience of German Physicians in the use of Chloral Hydrate.*—Dr. ALOIS MONTI, of Vienna, has lately communicated to the *Jahrbuch für Kinderheilkunde* some observations on the use of chloral hydrate in the diseases of children. He found that, when doses of the drug suitable to their age were administered, the children exhibited a slight redness of the face, and a condition similar to intoxication, passing off into deep sleep. The pulse was at first somewhat accelerated and afterwards retarded, the respiration was unchanged, and the temperature of the body was reduced. Only very large doses produced a well-marked numbness of the skin and consecutive anæsthesia, with contraction of the pupils. The sleep was normal, and on waking there remained neither sleepiness nor congestion of the head, nor any other disturbance of sensation. The hydrate sometimes produced vomiting, but never diarrhœa, and the urine after twenty-four hours contained sugar. The dose was from $\frac{1}{100}$ to $\frac{5}{100}$ of a gramme (a gramme is about fifteen grains) for newly born children, and proportionally larger doses as the infants grow older. As to the special uses of the hydrate in children's diseases, Dr. Monti's remarks are as follows:—1. The hydrate fulfils the indication of causing sleep as well and completely in children as in adults. 2. In convulsions, whether symptomatic or idiopathic, the hydrate acts on the symptoms, and is only contra-indicated when the convulsions are complicated with inflammation of the bronchi, the lungs, or the heart. It must be used with great caution in the case of weak and anæmic children. Spasm of the larynx has been relieved by the hydrate, and the drug deserves notice in the treatment of chorea. In hooping-cough it seems to be useful in the first stage, but injurious in the third by diminishing expectoration. On the other hand, the chloral hydrate is uncertain and useless as an anæsthetic for surgical purposes, or in the treatment of any form of tetanus.

Dr. Kühn, of Haina, has communicated to the *Berlin Klinische Wochenschrift* his experience of the combination of chloral hydrate with morphia in the treatment of chronic cases of excitement in insanity, and in acute mental diseases caused by alcohol. The large doses of chloral hydrate necessary in delirium tremens make the employment of this drug rather dangerous. But Dr. Kühn gave to some cases of paralytics seized with occasional fits of excitement, and to patients suffering from dipsomania, a series of doses of chloral hydrate, with hydrochlorate of morphia, without any unfavorable consequences.

Dr. Stark has also published in the *Würtemburg Correspondenz Blatt* some remarks on the use of the hydrate in the treatment of mental disease. He recommends the combination of chloral hydrate with morphia (called by him morphio-chloral) in all cases where it is desired to produce a rapid relief of mental excitement. Dr. Stark considers that the hydrate belongs to the class of the most powerful sedatives and narcotics; that it is indicated in convul-

sions, nervous excitement, and agrypnia, and in the relief of pain; that it should be employed with caution when there are complications with affections of the stomach, lungs, or intestines, and in cachectic persons; that the dose of one or two grammes is generally sufficient; that morphio-chloral is generally preferable to chloral hydrate; and that subcutaneous injections of chloral, or the use of chloral hydrate in combination with injections of morphia, are to be rejected from practice.

Dr. Josef Steinhaus has published in the *Vienna Medical Press* some observations on the use of chloral hydrate in surgical operations, but it is alleged by other writers that such employment of the drug is so dangerous as to forbid its use.—*Brit. and For. Med. Chir. Rev.*, Oct. 1872, from *Schmidt's Jahrbücher*, April, 1872.

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16. *Value of Quinia as a Prophylactic.*—Dr. J. B. Hamilton, Royal Artillery, states (*Indian Medical Gazette*, Nov. 1871) that he has had numerous opportunities in the East and West Indies, and in Central America, of testing the value of quinia and its allied drugs as prophylactics where malaria is present. In Jubbulpore, in the East Indies, Dr. Hamilton had the care of a battery of the Royal Artillery, and he gave the men under his charge two grains of quinia each with marked benefit, during the months of September and October, 1865. In 1866 a regiment of the Line arrived at the same station, and, as the surgeon of the regiment did not believe in the prophylactic powers of quinia, the alkaloid was not administered to the men, although Dr. Hamilton continued to give it to his battery. The wet season of 1866 happened to be a very malarious one, and fever of a severe remittent type attacked the regiment, 150 men being in hospital out of a force of 500, and about twenty deaths took place. During the same time the health of Dr. Hamilton's battery remained remarkably good, only about 4 per cent. being in the hospital, and no deaths occurring. Ever since that year Dr. Hamilton has carried out the same plan, and last year he made some comparative experiments as to the value of quinia, cinchonia, and quinoidia, and the result was that he placed cinchonia first as a prophylactic, then quinia, and at a long interval, quinoidia. He finds that by the prophylactic plan the cases of fever are fewer, of a milder type, and more amenable to treatment, while the sequelæ, such as dysentery, enlargement of the spleen, etc., are very rare.

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17. *Methylene Ether.*—Dr. B. W. Richardson states (*Med. Times and Gaz.*, Nov. 23, 1872) that the question has been asked him if he were to undergo an operation, and had determined to take an anæsthetic, which would he select in respect to safety and convenience? His answer is: "For safety I might prefer ether, for convenience I should prefer methylene; but I should actually combine the two. I should inhale from a mixture of pure methylene bichloride and absolute ethylic ether, having a fluid specific gravity of 1.100.

"The boiling-points of pure methylene bichloride and of ethylic ether are within 4° Fahr. of each other; the vapour density of each is nearly the same—that of ether being 37, and that of the methylene 42.5, compared with hydrogen as the standard of unity. In combination, therefore, the two liquids yield a mixture possessing a steady and uniform boiling-point and a nearly equal vapour-density, so that equality of effect is sustained throughout a long administration. The vapour is, moreover, agreeable to inhale—it is neither irritating nor suffocating. I am inclined to think, too, that the physiological action of the methylene is favourably modified by the ether.

"For quickness of action the mixture thus described does not approach simple methylene bichloride, but for safety I believe it stands hardly second to the safest anæsthetic I have ever experimented with—viz., methylic ether gas. It is best administered from a simple mouth-piece that has been constructed for me by Messrs Krohne and Sesemann. From three to six fluidrachms is the average quantity required," he says, "to produce good anæsthesia." He calls this mixture *Methylene Ether.*

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18. *Nitrous Oxide as an Anæsthetic.*—The Joint Committee of the Odonto-

logical Society of Great Britain and of the London Dental Hospital, appointed to inquire into the value and advantages of protoxide of nitrogen as an anæsthetic, have made their report.

The points to which the Committee directed their attention were chiefly the following:—

1. The physiological action of the gas, and the methods of resuscitation in threatened death.
2. The possibility of prolonging its anæsthetic effects.
3. The best methods of preparing, storing, and administering the gas, and the modes of meeting anomalous effects produced by its administration.
4. Any other additional information which might come to their knowledge.

Dr. Frankland, Mr. Coleman, and Mr. Braine were appointed to carry out individually experiments to ascertain, if possible, the physiological action of the gas. The conclusions which the two first-named gentlemen consider deducible from their investigations are given in the report.

With regard to the question whether nitrous oxide is decomposed when it is respired, a series of experiments were made by Dr. Frankland on a young and tame rabbit, and the results are given. Although the results do not admit of being used for the absolute solution of the problem proposed, nevertheless—as the observation of a manometer showed that the gases suffered but a very small diminution of volume during respiration—they may, the experimenter thinks, be safely taken as proving that not more than a very small proportion of nitrous oxide, if any, was decomposed, since the percentage proportion of this gas underwent no diminution during the progress of respiration. It was also shown, Dr. Frankland believes, by his experiments, that nearly the whole of the oxygen absorbed by the animal was employed in the oxidation of carbon; that the united volumes of nitrogen and nitrous oxide suffered a corresponding slight augmentation; and, thirdly, that the volume of nitrogen in the mixed gases experienced an apparent slight reduction during their use in respiration, whilst that of nitrous oxide underwent a slightly greater increase. But, with regard to the last results, Dr. Frankland admits that they may be considered within the limits of experimental error.

Mr. Coleman proceeded also to determine the question whether nitrous oxide was or was not decomposed when respired. He deduces, from his experiments made on the expired air of the human subject, the conclusion that, if nitrous oxide gas be at all decomposed in the blood, it must be only in very small quantities.

The majority of the Committee adopt the opinions advanced by these two gentlemen, and recommend that, in the event of alarming symptoms presenting themselves during the administration of the gas, it be immediately suspended, and no impediment be offered to the free admission of air into the lungs.

Prolongation of the anæsthesia, the Committee state, may be accomplished in mouth operations by "a nose-piece," and by throwing a jet of gas into the mouth at each inspiration while the operation is proceeding, the nose being kept closed by a spring clip; in operations on other parts of the body, by checking and re-supplying the gas through the face-piece from time to time, as circumstances may require, insensibility can be kept up for several minutes; and the Committee direct the attention of surgeons to this fact especially, because many accidents have lately occurred from the administration of chloroform. The Committee point out the great improvements carried out in the administration of nitrous oxide, and in its storing and liquefaction.

The Committee have now in their possession the records of 58,000 cases in which the gas has been administered in this country. This extended experience enables them to add that the occasional occurrence of vomiting, hysteria, etc., which occur under the influence of the gas, have been less manifested than usual, from the better administration of the anæsthesia and the purer character of the gas.

Its mode of producing death they believe invariably to commence at the lungs, and that artificial respiration will resuscitate the animal as long as the heart continues beating. Nitrous oxide mixed with chloroform did not answer

in the hands of the Committee; but the latter as an adjunct was found to be of service in special circumstances.

The Committee complete their report by expressing their firm conviction that nitrous oxide is the safest anæsthetic known, and that not a single fatal case has occurred which can be fairly attributed to its action.—*Brit. Med. Journ.*, Nov. 9, 1872.

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19. *Claims of Ether as an Anæsthetic.*—The number of deaths which have followed the administration of chloroform has at last awakened attention in England to the safety of ether as an anæsthetic, and this has been more particularly manifest since Dr. B. Joy Jeffries, of Boston, during the recent meeting of the Ophthalmic Congress in London, called attention to the subject, and exhibited the method of administering ether employed in this country.

Mr. J. Warrington Haward, Assistant-Surgeon to the Hospital for Sick Children, and Surgical Registrar to St. George's Hospital, in a communication to the *Brit. Med. Journ.* (Nov. 9th), writes: "For more than two years past (owing greatly to the representations of Dr. Bigelow) I have been in the habit of giving ether largely both in public and private practice, and, so far from its being practically excluded from hospitals, have administered it for the majority of the operations at St. George's Hospital during that period. Moreover, I had advocated its use in a paper read before the Royal Medical and Chirurgical Society in October, 1871, in which I proved its superior safety to chloroform, and described the method of its administration."

Mr. Frank Underhill writes to the same journal: "Having lately returned from a visit to the United States, where I had good opportunities for inspecting most of the large hospitals, of seeing ether administered a great number of times, I am persuaded that the advantages claimed for it by our American brethren are fully proved by facts. During the whole of the time I was in the country—a period of nearly a year—I never saw or heard of a death which could be justly attributed to its use."

Mr. J. T. Clover, in a paper in the same journal, in describing the merits of ether and chloroform as anæsthetics, says: "There are two questions which ought to be considered separately. 1. Which is the less likely to cause death? 2. Which leaves the patient in the more favourable condition afterwards?

"As to the safety of chloroform, my experience of it during the last twelve years, since I adopted the plan of measuring the chloroform and air, so as to insure that there shall not be more than three minims and a half in each hundred inches of air, has been so favourable that I have never felt the need of another anæsthetic on the ground of safety. I have administered it without rejecting a single case as unfit for it, and to many persons whose heart and lungs were in a morbid state. I have never had a death from it or from any anæsthetic. . . .

"If chloroform be administered without due means to prevent a large dose from being given, and without watching the pulse, I have no doubt that it is more dangerous than ether.

"As to the question, whether ether or chloroform leaves the patient in the better condition, I should say that a patient kept quiet during an operation for half an hour would recover better from chloroform than from ether. The point may be considered as doubtful, and perhaps the after-effects of ether would be less unpleasant if we could contrive a better way of administering it."

Dr. J. Morgan, Surgeon to Mercer's and to the Westmoreland Hospital, strongly advocates, in an article in the *Dublin Journ. of Med. Science* (Nov. 1872), the claims of ether as an anæsthetic. He states: "I myself have used ether over 160 times during the last two months, and I can unhesitatingly say that nothing could be more satisfactory. I did not once see the slightest approach to syncope, or even any unpleasant symptom, although it was exhibited to patients as old as seventy-one and as young as four years.

"I have produced full insensibility in three minutes, and have kept a patient for fifty-five minutes under the influence.

"I have used ether where chloroform had been used before, but the results were incomparably superior in every way; there was less danger, less struggling,

no sickness of stomach, and a more manageable anæsthetic condition from which the patient emerged as from a sleep. A most successful instance, during the last few days, for a cataract operation, by Dr. Jacob, on a child of eleven, is worth recording. The child was laid on the operating couch, was insensible by etherization in four minutes, was operated on and awake again, with a smile on the face, within ten minutes, wholly unconscious of anything having been done.

"Dr. Taylor, of Nottingham, in a note just received, speaking of ether, mentions: 'I used it this morning on a private patient for cataract extraction, to whom I had before given chloroform, which produced such alarming results that I dare not give it again. I have given it in about twenty cases with satisfactory results.' . . .

"It has been stated that ether, when used as an anæsthetic, produces as much, if not more, struggling than does chloroform, in which the spasmodic condition is so frequent, that writers lay it down as one of the stages. I must say I find this not to be the case, and I am satisfied that, with a larger experience, practitioners will confirm this statement. The struggling or spasm is due to the imperfect modes hitherto pursued in the administration, where a sponge is used, or a cone of paper, or a towel, or, in fact, where air is freely admitted; this, I believe is a mistake. Air should be more or less perfectly excluded, and the patient be allowed to breathe the ether-vapour repeatedly. The sickness of stomach which has been noted, as in chloroform administration, is due chiefly to the same cause, and also to the fact that the patient is allowed to eat within a short time of the administration. I have only seen five cases of sickness in 160, and in these etherizations, either food or drink had been taken shortly before.

"I have used ether in several cases where I had used chloroform previously, and found that the struggling or spasmodic stage, which was energetic and almost uncontrollable in chloriformization, was nil with ether.

"Sickness of stomach is said to succeed to etherization more than to the use of chloroform; my experience with both leads me altogether to disagree. The precaution should be taken, that no food be ingested within two or three hours at least. I am sure the instances will be rare, indeed, where sickness occurs, if this simple rule be adopted.

"Another objection, if it can be called one, that has been suggested is, that of the odour of ether from the breath being so persistent. I have not found it after a few hours. But even if it lasted a week, it could not have a feather's weight influence in the consideration of using an agent which has been shown to be '*the safest of all anæsthetics*,' and that which, chloroform, which alone can be compared with it in efficacy, is '*eight times more dangerous*.'"

In an editorial in the *British Medical Journal* (Nov. 23) it is stated that a good deal of progress has been made during the last fortnight in the use of ether. "Three weeks ago the administration of ether was a rare exception; we have reason to believe that it is already becoming the rule."

The latest No. of the *British Med. Journal* (Nov. 30th) which we have received contains a note on the administration of ether by JOHN COUPER, Surgeon to the London Hospital, and to the Royal Ophthalmic Hospital, Moorfields, in which he states: "Having repeatedly seen the administration of ether by Dr. Joy Jeffries last August, I have since employed it exclusively, and propose now to state, briefly, the results of this trial. The chief operations performed have been ovariotomy, lumbar colotomy, amputation through the knee-joint, partial resection of ankle, excision of tumour over the parotid gland, besides many eye operations. . . .

"Thus far my impression is, that ether is less dangerous to life than chloroform, on account of its inaptitude to produce cardiac syncope; that its administration is rarely if ever followed by obstinate and dangerous nausea; that it narcotises as quickly and as certainly as chloroform, and with as complete muscular quiescence; and that recovery from it is generally quiet and satisfactory."

In an editorial in the same No. of this journal it is stated: "We are compelled to postpone, for want of space, letters from Mr. Jeaffreson (Newcastle) and Mr. Greenway (Plymouth), which speak favourably of ether. We learn from

Mr. Wheelhouse that, at the Leeds Infirmary, in consequence of what we have felt it our duty to write on the subject, ether has had a continuous trial there as an anæsthetic during the last few weeks with favourable results, which confirm all that has been said of its efficiency."

It will be seen that a decided reaction has at last taken place in England in favour of ether as an anæsthetic; it is surprising that so many surgeons should have thus long obstinately persisted in preferring the use of chloroform, notwithstanding the numerous deaths which have followed its use, and the strong array of evidence which has been adduced, in this Journal and elsewhere, of the superior safety of ether.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

20. *Researches on the Embolic Process.*—Prof. Jul. Cohnheim remarks that the copious literature on the subject of embolism and its consequences, has been chiefly concerned in determining the anatomical condition; the mechanical causation of infarction, etc., has not been explained; and, although Virchow clearly showed that the existence of a collateral circulation was a means of preventing, in many cases, the after-effects of an embolon (infarction), yet the usual explanation, to be found in the German text-books (Rindfleisch, Förster, etc.), is that this same collateral circulation, leading to rupture of the capillaries, is the cause of infarction. The experiments hitherto instituted have been incomplete, in so far as the conditions induced by the introduction of embola into the circulation have not been under observation from beginning to end. At a longer or shorter interval after the introduction of the embolic substance, the organs have been examined; but the intermediate process has not been objectively determined, and the explanations have been necessarily more or less fanciful. Dr. Cohnheim made his observations on the tongue of the frog, where the circulation could be at any time watched through a low power of the microscope. This organ was found to be well suited for the purpose, not only from the arrangement of the bloodvessels in its substance, but also from the peculiar origin of the lingual artery, along with the carotid, from the aorta, whereby it was possible to throw embola into the lingual and its branches, without, at the same time, plugging other parts of the vascular system. The substance used for injection was that adopted by Panum, viz., wax in minute pellets, coloured black, in the form of an emulsion. When an embolon was lodged in an arterial branch, the first and instantaneous effect was, as might be expected, that the blood was driven with increased force through the branch immediately below, the increased rapidity being continued into its capillaries and returning vein. If the obstructed artery had a collateral anastomosis, the pressure thrown upon the branch below it soon became equalised; but if the embolised artery had no anastomosis beyond the plug, the increased rapidity in the lower branch continued for some time, without leading to rupture and hemorrhage, and became gradually less. In the obstructed artery the contents were found at rest for a distance on both sides of the embolum, on the cardiac side, as far as the next branch. It was observed, as peculiar to the frog, that the blood did not coagulate in the vessel; sometimes a closely packed column of red corpuscles occupied it, and at other times it was filled with plasma and white corpuscles alone, the variation being probably dependent on the suddenness with which the stoppage in the circulation was brought about. The condition found in the capillaries of the embolised artery, and in its returning vein, differed entirely according as there was or was not a true anastomosis. If there were, beyond the plug and between it and the capillary territory of the obstructed vessels, another branch pouring in, then the circulation in the capillaries and the vein of the embolised artery remained almost unaffected. This observation corresponded with what Virchow had previously determined. If, however, there were no such anastomosis, then very note-

worthy consequences followed. An artery that has no anastomosis between the seat of the embolon and its capillary territory, may be conveniently styled, says Dr. Cohnheim, a "terminal artery" (*Endarterie*); and in the case of a terminal artery it was uniformly found, whether the artery were large or small, that the blood in its capillaries and returning vein, remained absolutely motionless up to a certain point. At the point where the vein opened into another vein coming from a free artery, and in which the circulation might be either of normal or of increased rapidity, there commenced a backward movement of the stagnating blood in the occluded vein. The free vein transmitted the greater part of its blood in the normal direction towards the heart, but at the point of junction, a portion of it formed a reversed current up into the vein of the embolised artery, whereby the stationary column of blood was driven slowly and gradually back through the vein into the capillaries, and even into the artery itself. When, under this steady pressure, the vascular territory had reached a certain degree of fulness, a rhythmical to-and-fro motion set in, and the observer satisfied himself that the blood-corpuscles were really driven forward by the to-and-fro motion as well as by the steady pressure that preceded it. After a few hours, this region had assumed a dusky red colour, and after one or two days it showed itself to the naked eye as a dark-red sharply defined wedge, beside which the rest of the tongue was markedly pale. When the organ was stretched out and examined under the microscope, the aggregate vessels of the wedge-shaped segment were seen to be densely filled with closely packed red corpuscles, which, in the capillaries, had lost their individual contour. All the other tissues within the segment remained unchanged; the epithelium was normal, the ciliary movements uninterrupted, and only a few of the muscular fibres showed a slight change.

Up to this point, the effect of an embolon has been seen to be a steady filling up (*Anschoppung*) of the vascular territory behind it, and so far the process is intelligible. But after the *Anschoppung* has lasted for some time, a new phenomenon appears, viz., hemorrhage. Along the sides of the capillaries, numerous red corpuscles are seen to mass themselves, obscuring the outline of the vessels, and in some cases completely surrounding them. Where the capillaries lie close together, the red corpuscles agglomerate to form a heap which can be recognized as a hemorrhagic point by the naked eye; at some points of the capillary wall the number of corpuscles is greater than at others. What is usually seen is that, at certain points, large numbers of red corpuscles slip out of the capillary, generally slowly, one after the other, sometimes more quickly, and collect into a mass. At those points, the condition of the capillary wall was in no wise different from that of the wall at other points, and no part of the whole vascular territory showed the slightest morphological change, even under the highest magnifying power, neither in the capillaries nor in the smallest veins, which are also the seat of small extravasations. The final result of this escape of blood (*Blutaustretung*), which may go on for several days, is that the blood within the dark-red wedge previously described is now located not only in the vessels, but also in the tissues, and so there results what we have long known as a "hemorrhagic infarct."

Not satisfied with an explanation of these escapes of blood on mechanical grounds, Dr. Cohnheim instituted a set of experiments with a view to determine whether the stoppage of the circulation within a vessel did not produce an effect upon the physiological soundness (*Integrität*) of its walls. To this end, he entirely stopped the circulation in the frog's tongue by putting a ligature round it bodily at its root. On the stoppage of the circulation, the tongue remained pale or red, according as it was much or little injected with blood at the moment of ligaturing, and the relative colours of the venous and arterial blood remained unchanged. If the ligature remained on for some time, the corpuscles underwent certain changes, but no morphological change was observed in the walls of the vessels. The epithelium, the ciliary movement, and the muscular fibres were all more or less affected according to the duration of the ligature, but no changes were made out in the nerve-fibres nor in the connective-tissue corpuscles. The functional condition of the vessels was then tested by removing the ligature. If the ligature had remained on for only

twenty-four hours, the circulation soon regained its normal character, the vessels having first dilated and then contracted to their usual calibre. But on the removal of a forty-eight hours' ligature, the phenomena were entirely different. The circulation recommenced without much difficulty, and the vessels dilated; but only the arteries returned to their normal size, the veins remaining dilated. The circulation in them became slower, the white corpuscles collected along the sides, and in a short time the observer could see a copious emigration of them from all the small and medium-sized veins. In the capillaries, there was a limited "diapedesis" of red corpuscles. If the ligature had remained on for sixty hours or thereabouts, the "diapedesis" or hemorrhage from the capillaries became abundant. If the tongue remained ligatured till the fifth day, the circulation did not re-establish itself at all, and the organ became gangrenous. These results were confirmed by experiments on the lungs and mesentery of the frog, on the rabbit's ear, on the testicle of the dog and guinea-pig, and on the intestine and kidney. Other striking experiments demonstrated that the escape of blood was probably not at all dependent on the nerves, nor on the altered condition of the blood itself; and Dr. Cohnheim concludes that the arrest of the circulation within a vascular territory has such an effect upon the functional soundness of the walls of the vessel, as will account for the escape of blood that was observed in the previous experiments with the embolon. The filled condition (*Anchoppung*) of the vessels behind the embolon passes into a real infarction, by reason of the change which the vessels and, above all, the capillaries undergo in the interval, in consequence of the arrest of their regular blood-current.

In the second half of his monograph, the author applies the results determined by his experiments to explain the occurrence of infarction in the various organs of the human subject, and, in the case of embolic abscess, the causes that determine the specific rather than the mechanical action of an embolon.

Our abstract has necessarily omitted many of the collateral points made out in the research. The entire work may be recommended to English readers, not only for the important facts that it determines, but also for the very complete application of the inductive method that it exemplifies.—*British Med. Journ.*, Nov. 16, 1872, from *Untersuchungen über die Embolischen Processe*, Berlin, 1782.

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21. *Contagiousness of Phthisis.*—Dr. Richard Payne Cotton, Senior Physician to the Hospital for Consumption, etc., Brompton, whose opinions, from his opportunities for observation, are entitled to great weight, discusses (*Brit. Med. Journal*, Aug. 31st, 1872) the very important practical question whether consumption is or is not contagious, and he strongly maintains its non-contagiousness. He believes phthisis "to be a purely constitutional disease, which may be either inherited or acquired, but which, from its very nature, is incapable of being conveyed from one person to another in the ordinary sense of the word contagion. I have, indeed, never met with a case of pulmonary phthisis, however apparently due to a contagious origin, which could not be much more easily and rationally accounted for by generally recognized causes, than by the doctrine of specific and contagious influences."

"Upon the question of contagion, however," he adds, "practical evidence is of far more value than anything speculative; and as a great experiment upon the zymotic character of phthisis has long been going on at the Consumption Hospital, I shall briefly give the results.

"The Consumption Hospital was opened in the year 1846, with ninety beds. Ten years later, it was completed; and since that time, two hundred beds have been constantly occupied. We have lost, during this long period, only one nurse from phthisis; and this was a poor creature whose husband had deserted her, and who had long endured, from other causes also, considerable mental anxiety and physical exhaustion. On the other hand, the services of the nurses generally have been unusually prolonged; and I can myself testify to their general health being, as a rule, remarkably good. Of those *now resident*, two have been at duty in the hospital seventeen years: one has resided thirteen years; one, eleven years; two, ten years; two, nine years; one, seven years;

one, four years; two, three years; and four, two years. The two oldest nurses have lately died of old age and general decay, after having long been superannuated; each of these had resided in the hospital for upwards of twenty years.

"Of the gallery maids, whose duty it is to be much within the wards in sweeping and scrubbing the floors, only one has been known to have been affected with phthisis; whilst it is obvious that, during so long a period, the numbers of persons thus employed must have been considerable.

"Our engineer has seen eighteen years' duty within the hospital, and he is now in good health.

"We have had, at different times, three attendants in the *post-mortem* room. The first of these is still living, but in infirm health, the result of intemperance; the second left with spinal disease; the third has been in his office for nearly four years, and is in good health.

"Of the dispensers, one who kept to his post for above ten years is living, and well; three who have held office in the dispensary since the year 1867 are also well; and the present senior dispenser has been with us for ten years. Many others have been in this department since the opening of the hospital, but only one has been known to have been consumptive.

"The resident clinical assistants, of whom we are able to obtain reliable information, amount to seventy-eight in number. Three of these are said to be phthisical; but only one has been known to have died of phthisis. This gentleman I knew intimately; he was always of consumptive appearance, and one of his sisters had died of phthisis.

"Our resident medical officer, Mr. Edwards, to whom I am indebted for the statistics I am now giving, has held office for more than twenty-one years; and all those who know him can testify both to his continued health and his undiminished energy and usefulness. The present matron has also been in her office for more than twenty-one years, during which long period her health has been excellent.

"The present secretary has been at his post for fifteen years; and his only predecessor, who is still alive and well, had held the same office for sixteen years. The assistant secretary has been at his duties within the hospital for eighteen years; and a clerk—whose office it is to register the out-patients, and who must, on that account, be exposed to an unusually great extent to phthisical contagion, did such exist—has been at his work for five years. I am happy to add that all of the above are now in excellent health.

"The present chaplain has been with us for twenty-two years; and his two predecessors are still living. Happily all of them are well.

"Of the staff of physicians and assistant physicians—nineteen in number—one only has been affected with phthisis; and he was a young man of delicate and decidedly consumptive aspect. The period of office which some of us have had is unusually long. Of the present physicians, two have been upon the staff twenty-four years each; one for seventeen years; one for thirteen years; one for nine years; and one for five years. The late senior physician, who resigned only three years ago, had been attached to the hospital, and in constant work there, from its very foundation. Two of the former physicians who resigned their appointments, and subsequently died of disease quite distinct from phthisis, had held office in the hospital for fifteen and nineteen years respectively."

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22. *Morbid Effects of Alcohol as shown in Persons who Trade in Liquor.*—This is the title of a paper read before the Royal Medical and Chirurg. Soc. (Oct. 22, 1872) by Dr. W. H. DICKINSON, which the author offered as a contribution to the morbid anatomy of alcoholism founded upon a comparison of post-mortem appearances between persons trading in liquor and persons occupied independently of it, and not known to have been drunken. The assumption that people who get liquor for nothing drink more than those who have to pay for it, is, the author said, justified by the common tendency of mankind, as well as by the notorious inebriety and liability to delirium tremens of potmen, waiters, cellarmen, draymen, brewers, barmen, and publicans—the chief members of the liquor-trading class. The paper is based upon an analysis of the

post-mortem and case books of St. George's Hospital for a period of thirty years. This comprised the particulars of the examination of the bodies of 149 traders in liquor. For comparison, there were taken from the same source the same number of examinations of persons otherwise and very variously employed, chosen by rule so as to afford a fair standard. The full details were tabulated and laid before the Society. Tabular abstracts, representing the condition of each organ in the two classes, were incorporated in the paper.

The general conclusions of the inquiry were summed up by the author as follows:—

"Alcohol causes fatty infiltration and fibroid encroachment; it engenders tubercle, encourages suppuration, and retards healing; it produces untimely atheroma, invites hemorrhage, and anticipates age. The most constant fatty change, replacement by oil of the material of epithelial cells and muscular fibres, though probably nearly universal, is most noticeable in the liver, the heart, and the kidney. The fibroid increase occurs about the vascular channels and superficial investments of the viscera, where it causes atrophy, cirrhosis, and granulation. Of this change the liver has the largest share; the lungs are often similarly but less simply affected, the change being variously complicated with, or simulative of, tubercle; the kidneys suffer in a more remote degree. Alcohol also causes vascular deteriorations which are akin both to the fatty and the fibroid. Besides tangible atheroma there are minute changes in the arterial walls, which show themselves by cardiac hypertrophy and cerebral hemorrhage. Drink causes tuberculosis, which is evident not only in the lung but in every amenable organ. Drink promotes the suppurative at the expense of the adhesive process, as seen in the results of pneumonia, of serous inflammations, and of accidental injuries. Descending from general conditions to the individual organs, the effect of alcohol upon the nervous system must be looked upon as special, and taken by itself. Apart from changes which, like delirium tremens, are more evident during life than after death, the brain pays a large reckoning in the shape of inflammation, atrophy, and hemorrhage. With regard to the other organs, they are damaged by alcohol much as they stand in its line of absorption. Next to the stomach the liver suffers, by way of cirrhosis and fatty impregnation. Next the stress falls upon the lung, taking every shape of phthisis. A large share in the pathology of intemperance is also taken by the arterial system, as seen in its results—atheroma, cardiac hypertrophy, and hemorrhage. Lastly, the kidneys, more remotely exposed, have a smaller participation in the common damage of alcoholism. They undergo congestive enlargement, fatty and fibroid change, but they do not suffer commensurately with the bloodvessels, or as frequently as the other viscera.

"So far we have seen only the ill which alcohol produces. It may be asked, Is there none which it obviates? Apart from its medicinal action, which the evidence before us does not touch, has it no *per contra* of prevention? It is not easy to answer this inquiry. Some active inflammations, such as pneumonia and endocarditis, are diminished in the alcoholic trades; but it must at once be seen that the increase of the alcoholic disorders must necessarily cause an apparent diminution in all which are unaffected by this agent. A man may be saved from pneumonia or acute rheumatism, not because alcohol is antagonistic, but because it kills him prematurely in another way. He can die but once. Therefore, though under alcohol some forms of disease are comparatively infrequent, we must use much caution in concluding that it has a directly preventive influence. Nevertheless, it may be laid down as an axiom that any drug which can do harm can do good. Disease is most various, and may, or rather *must*, represent contrary conditions. It may be positive or negative, plus or minus. Too much or too little of any of the shapes of heat, food, and work, may spoil the equipoise of health. If a drug promotes one change, it may prevent its opposite. Alcohol certainly gives an asthenic type to disease. Although we cannot as yet say that it defibrinates, yet it retards adhesive and plastic processes. This influence may be beneficent if it hinders the development of acute inflammation, and obviates the formation of coagula where, as in acute rheumatism, the process is harmful. It is possible that by some such antagonism we may explain the remarkable paucity of endocarditis

in the alcoholic series. But, at the best, the protecting is less certain and less effective than the deteriorating influence. In brief and final enumeration, alcohol replaces more actively vital materials by fat and fibrous tissue; it substitutes suppuration for new growth; it promotes caseous and earthy change; it helps time to produce the effects of age; and, in a word, is the genius of degeneration."

Dr. ANSTIE said that the paper contained facts of high interest, but which required consideration as to how far the number of cases warranted the conclusions; those cases only having been included where alcohol had been taken in excess, and thus a large number of persons subject to chronic alcoholism have been included. He did not agree with the conclusion as to the suppurative form of inflammation being the more common. With regard to the frequency of cirrhosis, Dr. Anstie would say, from his experience of over thirteen years, in which he had seen a large number of patients suffering from the effects of chronic alcoholism, that it was rarely met with; he had only seen thirteen cases in which there were symptoms of cirrhosis, though some of the patients had been under observation for ten years. He agreed with the prominence given to nervous change and symptoms; they were always in advance in the effects of alcohol. It was interesting to note how frequently inflammatory changes, such as slight attacks of inflammation of the brain, occurred, with delirium and convulsions, and from which the patient recovered. He thought the effects of alcohol, long continued, tended to the fibroid form of phthisis. He was pleased to see that the tables showed that kidney disease on a large scale was not increased by alcohol; this had been shown by statistics collected in Glasgow. He believed the notion arose from false ideas of the elimination of alcohol by the kidneys—too much work was thrown upon them, so causing degeneration.

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23. *Artificial Production of Epilepsy.*—At one of the late meetings of the Société de Biologie, M. BROWN-SÉQUARD communicated to the Society the results of experiments he had made to determine the path pursued by irritation of the sciatic in order to reach the upper part of the spinal cord and to produce epilepsy. Section of the sciatic nerve near its origin, and, still more, the forcible ablation of the nerve, are constantly followed by epilepsy. Nevertheless section of the spinal cord immediately above the origin of the sciatic nerve does not produce epilepsy. This unexpected fact gives rise to the suspicion that the occurrence of epileptic symptoms is not due to the section of the fibres of the sciatic nerve proper, but rather to the section of the fibres of the sympathetic which unite themselves to the sciatic after its emergence from the spinal cord. M. Brown-Séquard naturally thought it would be interesting to divide the several sympathetic branches that pass to the sciatic; but, unfortunately, this is extremely difficult to accomplish. Division of the great sympathetic in the abdomen produces only transient effects—incipient symptoms, as it were, of epileptic attacks, but nothing positive or definite. On the other hand, section of the roots of the last dorsal and first lumbar nerves produces epileptic attacks, and it is known that these roots furnish sympathetic filaments to the sciatic nerves. From all this M. Brown-Séquard concludes that it is to section of the sympathetic that we must essentially attribute the artificial production of epilepsy.—*Lancet*, October 5, 1872.

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24. *Pathology of Cerebral Hemorrhage.*—Dr. ZENKER, of Erlangen, in a communication made to the last meeting of the Society of German Naturalists and Physicians, confirms in its essential points the statement made several years ago by Charcot and Bouchard, and by Charlton Bastian, that the disposition to cerebral hemorrhage consists in the formation of minute aneurisms. Having examined all the cases of spontaneous cerebral hemorrhage that have come under his notice during several years, Dr. Zenker in every instance found miliary aneurisms, both in the wall of the hemorrhagic deposits, and in other parts of the brain. They appear to the naked eye as little fluctuating tumours as large as a pin's head (rarely larger), and assume all the ordinary forms of aneurism. Usually the inner coats of the vessel give way, and a dissecting

aneurism is formed. The disease may remain at this stage for some time, or there may even be recovery, a small pigmental mass being left. In other instances, all the membranes burst, and hemorrhage into the brain takes place.

As to the origin of these minute cerebral aneurisms, Dr. Zenker does not entirely agree with MM. Charcot and Bouchard. These observers have called in question the dependence of these aneurisms on atheromatous degeneration; Zenker, however, is convinced that they have their origin, just like aneurisms of the larger vessels, in atheromatous disease of the inner coat of the arteries. These minute aneurisms may indeed be present, without any evident sign of disease in the arteries at the base of the brain. On microscopic examination, however, of the aneurisms and of the arterial twigs on which they are seated, the inner coat is found to present changes corresponding to the uneven thickening which occurs in atheroma of the larger vessels. Thus the researches of Charcot and Bouchard do not subvert the old doctrine of the dependence of cerebral hemorrhage on vascular degeneration, but give it an important confirmation.—*Brit. Med. Journ.*, Nov. 9, 1872.

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25. *Aphasia immediately following Paracentesis Abdominis.*—Dr. Gillette records (*L'Union Médicale*, Sept. 24, 1872) a curious case of this observed by him in the wards of M. A. Guérin at l'Hôtel-Dieu. The subject of it was a woman æt. 45, whose abdomen was largely distended by serous effusion resulting from disease of the liver. The trocar was inserted in the left side on the 4th of April, 1872, and the fluid evacuated, and M. G. then applied compression by means of wadding and a bandage. Notwithstanding this precaution the patient was seized a few moments after the operation with complete aphasia and hemiplegia of the right side. When seen by Dr. Gillette nearly five months afterward, the patient appeared very intelligent, and evidently understood questions put to her, but could not reply. Her power of speech, which at first was entirely extinct, had slightly returned, but within very restricted limits. She had not lost her memory, and replied correctly, affirmatively or negatively, to questions by motions of her hand. She had recovered from the paralysis of the right lower limb, but, though the right upper limb retained its sensibility, she had no power of motion with it; on the contrary, it is strongly contracted; the fingers are so flexed that the nails have made their imprint on the palm, and every effort made by others to extend her fingers gives her extreme pain.

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26. *Spinal or Essential Palsy of Children.*—M. Rosenthal, in the fifty-second number, 1871, of the *Oesterreich. Zeitschr. f. Prakt. Heilkunde*, observes that atrophy and malformation of the anterior cornua of the spinal cord, as first pointed out by the French pathologists, are the chief pathologico-anatomical alterations met with after death in the so-called spinal paralysis of children. According to M. Rosenthal, the atrophy of the nerve cells of the gray substance is not so much the primary morbid change, as the enlargement and thickening of the bloodvessels observed by him, signs of an active participation of the latter, in the diseased action going on, a pathological process which in its progress becomes the cause of the waste, or even entire destruction, of the gray substance of the brain. In opposition to the view of Duchenne, M. Rosenthal has observed that improvement may take place in the motility of the paralyzed muscles, even though the lost Farado- and galvanic excitability of the muscles be not again restored.

Within the first six to nine months from the commencement of the attack, and hence beyond the eventual failure of the electrical excitability of the muscles, still is the prognosis not to be considered unfavourable.

In two cases of the essential paralysis of children reported by Damaschina, there was likewise evident lesion of the vessels of the anterior cornua of the spinal cord. It would appear that the last-named gentleman, as well as Duchenne, is inclined to view this abnormal condition of bloodvessels as the primary cause of the paralysis.—*Centralblatt f. d. Med. Wissenschaften*, No. 11, 1872.

D. F. C.

27. *Convulsive Phenomena in Diseases of the Spinal Cord.*—In an interesting monograph devoted to the above subject, Dr. HALLOPEAU, of Paris, thus sums up various suggestions for treatment:—1. Oppose the transmission of centripetal excitation (especially by means of sulphate of atropia). 2. Oppose the transmission of centripetal irritation (by constant electric currents, as recommended by Mendel). 3. Lower the excito-motor power of the cord (bromide of potassium, ergot of rye, and the ether spray along the spine).—*Lancet*, October 5, 1872.

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28. *Traumatic Jaundice.*—Professor VERNEUIL, of Paris, in a paper recently read to the Academy of Medicine, sets down the following conclusions in connection with traumatic jaundice:—1. Jaundice may supervene after a traumatic lesion bearing upon the liver itself or some other organ more or less distant from the liver. 2. In the first case it is traumatic jaundice, properly called a direct jaundice; in the second, indirect traumatic jaundice. 3. This last sort includes two varieties, clearly distinguished by the causes, course, prognosis, and pathogeny of the disease. 4. The first variety, or pyohæmic jaundice, is a symptom of purulent infection, and is caused by septicæmic alteration of the blood, with or without metastatic gatherings; the second, or reflex non-pyohæmic jaundice, is due, without doubt, to a perversion of the nervous action. 5. Direct traumatic icterus and pyohæmic icterus do not imply any previous alteration of the liver. On the contrary, an anterior organic lesion of this gland seems to be a necessary predisposing condition to the production of reflex traumatic icterus. 6. The diagnosis between the three varieties is often easy. For the first, it is enough to state the direct or indirect lesion of the liver. For the second, there exists the symptomatic accompaniment of pyohæmia. For the third, the circulatory system and the thermometer must be consulted. 7. Though the prognosis of icterus consequent upon wounds is a serious one generally, yet it varies much according to the nature of the complication. 8. The gravity of direct traumatic icterus will depend upon the disturbance brought on in the liver by the wound. Reflex icterus seems benign enough, except in those cases where the anterior lesion of the liver is of a serious character. 9. Reflex icterus does not seem to modify unfavourably the course of the healing process of the wound. 10. Reflex jaundice belongs to the great class of distant traumatic "deuteropathies." It constitutes one of the rarest forms of this class of disease, if we are to judge from the limited number of cases on record.—*Lancet*, October 5, 1872.

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29. *Asiatic Cholera.*—Dr. C. MACNAMARA, in an interesting paper (*Indian Med. Gaz.*, Sept. 2, and Oct. 1, 1872), gives a table, prepared by his assistant, of cases of cholera under his care, which illustrates, among other things, the fact that the left side of the heart, immediately after death from cholera, is as full of blood as the right. It also illustrates, clinically, the relation between the loss of weight of a patient suffering from cholera and the amount of vomiting and purging, and seems to indicate that it is not those patients who continue to vomit and purge frequently in cholera that recover, but, on the other hand, that those who rapidly lose weight, or, in other words, who are constantly being purged, most often succumb to the disease. This table shows that the more rapid the loss of weight, the more sure the death of the patient, and that in some cases a patient, suffering from cholera, may lose as much as thirty pounds in weight in the course of a few hours.

On post-mortem examination of a case of cholera, Dr. M. states: "We found the greater part of the mucous membrane lining the small intestines, covered with a glutinous, semi-opaque mucus-like matter; patches of this glutinous lining of the intestines had disappeared, leaving the deeply scarlet villous surface of the membrane exposed. On placing some of this mucus-like matter under a one-eighth of an inch object-glass, I found that it consisted principally of cylindrical epithelial cells embedded in a glutinous material. These cylindrical epithelial cells, examined immediately after death, afforded us a favourable opportunity for demonstrating the formation of the 'cholera cell' of Drs. Parkes and Lewis from the cylindrical epithelium. . . . I need hardly remind

the reader that Drs. Lewis and Cunningham assert that cylindrical epithelial cells are seldom to be discovered in the stools of cholera patients: and upon these observations a writer in the *Lancet* recently declared that we must abandon our ideas regarding the denuded condition of the mucous membrane in cholera being due to anything more than post-mortem changes; for, if the epithelial cells were shed during life in quantities similar to that found after death in the intestines, they must have been passed in the stool, which is not the case. I can only answer this argument by a counter-statement, to the effect that vast quantities of cylindrical epithelial cells are to be found in the stool first passed by patients suffering from cholera, but that, as the disease advances, the hyaline or cholera cells above described, and which are a production of the cylindrical epithelium in a very great measure, take the place of the cylindrical cells. It is very difficult to demonstrate this fact in cases of cholera, for, if the patient has remained in collapse for some time, the active changes in the epithelial cells cease, and beyond this we must operate on very fresh specimens, if we would satisfactorily demonstrate the changes I am about to describe in the cylindrical cells lining the small intestines. We should, therefore, if practicable, induce a condition of the mucous membrane in the lower animals, similar to that which occurs in man when suffering from cholera; and, so far as our present purpose is concerned, arsenic in poisonous doses excites changes in the intestinal epithelial cells, similar to those observed in the human subject after death from cholera. The accuracy of my statements may consequently be verified by any one accustomed to work of this description."

Dr. M.'s assistant has carefully noted the changes in the intestinal epithelium of a dog, poisoned by arsenic, and confirms the above statement.

In the case under consideration Dr. M. says, the epithelia found in the glutinous lining of the mucous membrane showed in numerous places evidences of change similar to that observed in the dog poisoned by arsenic, but Dr. M. could discover "only a few hyaline cells in this mucus-like material. On the other hand, in the fluid contents of the small intestines, multitudes of hyaline cells, with epithelia in an active stage of metamorphosis, were discovered, the truth being that the rapid formation of the *cholera cells* goes on towards the free surface of the lining of the intestines, and particularly in certain spots from which the epithelial cells had been completely detached (necrosed), leaving the engorged and denuded villous coat exposed to view. The hyaline cells in cholera thus float away with the *débris* of the epithelia in the watery stools; and after death, or if collapse has lasted for some time before death, the extreme contraction of the dehydrated walls of the intestines detach the epithelia imbedded in the glutinous-like matter from the surface mucous membrane, and these cells are consequently found free in the intestinal canal in much larger quantities than if the case has terminated rapidly, as in the present instance, and the post-mortem been made immediately after death; nevertheless, the fact remains that a man attacked by fatal Asiatic cholera passes within a few hours from a state of health to a condition in which the entire surface of mucous membrane, from mouth to anus, is involved in changes such as I have described in this case."

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30. *Hydatid Cyst of the Right Kidney simulating Ovarian Cyst.*—Dr. N. Loxguet presented to the *Société Anatomique* of Paris the notes of a case of this.

The patient had been considered during several years to be affected with an ovarian cyst, when she became pregnant, and was brought to bed on the seventh month, after a fall she had. On the 6th ult. she entered the wards of La Charité. The abdomen, which had swollen rapidly, then showed the appearance due to an ovarian cyst. On examination, the existence of adhesions was suspected; ovariotomy discarded, and puncture decided on as a possible procedure. But on the 15th the abdomen took a round shape, and became sonorous. All the symptoms of peritonitis supervened. The patient died, and at the post-mortem examination the ovaries were found perfectly healthy. The right kidney was quite sound; but in the left iliac fossa was discovered a ruptured cyst,

which had developed at the expense of the left kidney. No urinary troubles had ever been noticed during life.—*Mouvement Médical*, Nov. 9, 1872.

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31. *Bronzed Colouration of the Skin.*—Prof. BÉHIER maintains that the connection which Addison observes between a special form of asthenia, alteration of the supra-renal capsules and bronzing of the skin, and in the combination of which he recognized a new disease, is far from being clearly established. He shows that alteration of the capsules and asthenia may coincide without any alteration of the skin, and also bronzed skin may be observed without alteration of the supra-renal capsules, also that disease of the capsules may occur without alteration of the skin. He shows that the most frequently observed lesions in the supra-renal capsules are those commonly considered scrofulous or tuberculous, and with these the bronzed skin may be wanting. He also maintains that the general conditions and symptoms which have been attributed to the so-called Addison's disease are variable and uncertain. He argues that, inasmuch as the normal anatomy and physiology of the supra-renal capsules are at present not well known and doubtful, it is impossible to assess the pathological value of the alterations which these organs undergo and of their symptomatology, especially as their pathological manifestations are inconstant. Whilst, therefore, he allows that the phenomena of bronzed skin and capsular disease are worthy of careful study, he denies that the problem has been solved by Addison. The supra-renal capsules are not the *point de départ* of the altered colouration of the skin. M. Landois thinks that bronzed colouration is a symptom which may be met with in all cachexias, that it is only a result of the local transformation of the epithelium—a particular instance of functional disturbance. The objections to this opinion are that bronzed skin is rare in individuals affected by the cancerous, tuberculous, and other cachexias. But M. Béhier agrees with Landois that the bronzed malady is not a well-established and defined morbid entity.—*Brit. and For. Med.-Chir. Rev.*, Oct. 1872, from *L'Union Médical*, April 18 and May 2, 1872.

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32. *Idiopathic Development of Pigmentous Sarcomata of the Skin.*—In contrast with that form of pigmentous sarcomata of the skin, which are evidently metastatic (consecutive), KAPOSI (*Archiv f. Dermatol. u. Syph.*, IV. 2, 1872), has given the history of five cases, in which the sarcomata were developed idiopathically. The essential features, exhibited by these idiopathic cases, were the appearance on the skin, without any apparent exciting cause, of nodules of the size of a hazelnut, of a brownish or blackish colour; flat at their upper surface, and of a firm, elastic feel. They appear first on the soles of the feet and insteps, then upon the hands, subsequently upon the arms, legs, face, and trunk. The nodules in part become atrophied and disappear; while others give rise to a gangrenous ulceration. In a later stage of the complaint, similar nodules appear upon the mucous coat of the larynx, trachea, the stomach and intestines. The complaint generally terminates fatally in between two and three years. It is a remarkable circumstance that the lymphatic glands were in all the cases recorded free from disease.—*Centralblatt f. d. Med. Wissenschaften*, Aug. 17, 1872. D. F. C.

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33. *Contributions to the Therapeutics of Diabetes Mellitus.*—Dr. BALTHAZAR FOSTER in an interesting paper (*Brit. and Foreign Med.-Chir. Rev.*, Oct. 1872) gives the results of investigations made by him to determine the effects of remedies in controlling the excretion of sugar in diabetes mellitus. Six drugs were experimented with, and the conclusions which the study of the cases seem to justify as to the influence exercised by each drug are detailed.

The peroxide of hydrogen was given in two cases. It had little or no influence in diminishing the sugar excretion. In the one case in which the sugar and water fell, the skin acted most copiously, and the perspiration contained a large quantity of sugar. The improvement in the state of the urine was, no doubt, due to this second channel of elimination. In other cases, not here recorded, the remedy has failed me.

The liquid extract of ergot was given in four cases, one of which was complicated by extensive lung and kidney mischief. The ergot was given on the hypothesis that it might lessen the congestion of the abdominal viscera. The effects observed to follow the use of ergot were—(1) decrease in the quantity of urinary water, (2) slight decrease in the quantity of sugar, (3) slight fall in the specific gravity of the urine. The decrease in urinary water I have also observed in cases of diabetes insipidus, as well as in other cases of true diabetes.

The potash salts were given in succession to the same patient. The results show that they have no power of diminishing the quantity of urine or the amount of sugar. In other cases I have obtained similar results with alkalies, and have never observed any beneficial effects from their use in diabetes. It is worthy of note that in neither case was the acid reaction of the urine neutralized, although the urine is twice noted as being only faintly acid.

Opium was given to the same patient after the potash salts. The quantity of water fell, the specific gravity remained very stationary, and the quantity of sugar was lessened. The patient, however, improved manifestly out of proportion to the diminution of the sugar, an improvement which I have noticed in other cases under opium, when the sugar diminution has not been great, and which I am inclined to attribute to the influence of the opium in lessening the urea excreted. In the case here recorded the urea fell in the course of ten days nearly 120 grains. The opium in this case did not act nearly as well as it does in some cases.

Bromide of potassium in combination with tr. ferri perchloridi was given in two cases. This combination I have found much more useful in diabetes than the bromide alone; I have, however, only found it beneficial in mild cases. In such cases it seems to have some slight influence in diminishing the amount of water and checking the craving after food. This latter is its chief recommendation.

Lactic acid was given in four of the cases, and in one case combined with skim milk. In three of the cases the lactic acid was given in small doses, not exceeding two drachms a day. In two of these, rheumatic symptoms were produced, the quantity of urine fell, the specific gravity was not much affected, the sugar was diminished in quantity and the patients improved. In one case the sugar was not estimated, but the quantity of urine was lessened, and the specific gravity fell slightly, while no rheumatic symptoms appeared. In one of the cases the lactic acid was given in much larger doses to the extent of 3 oz. daily. In this case no rheumatic symptoms whatever were produced. The urinary water was diminished, the specific gravity was scarcely affected, and the sugar fell slightly, rising again when the acid was discontinued. In all these cases but one the functions of the skin were restored by the lactic acid. In this way the decrease of water may be wholly or partly explained. Thirst was not diminished particularly, and the appetite was if anything increased.

The use of lactic acid in cases dieted on skim milk is illustrated by one case. In mild forms of diabetes this treatment has often succeeded in my hands. Its chief recommendation is its greater ease of application than restriction to purely non-amylaceous food.

In addition to the effect of remedies, the cases related by Dr. F. illustrate the frequency of grief as an antecedent of the disease; the frail tenure on which the life of the diabetic is held, and the slight exertion by which this tenure is destroyed; and lastly the congestion of the abdominal viscera is exemplified in the *post-mortem* of one of the cases.

The details of eleven cases are given.

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34. *Hypodermic Injection of Ergotine in Internal Hemorrhages.*—Dr. Drasche, Physician to the Rudolf-Stiftung of Vienna, has published in some recent numbers (37–40) of the *Wiener Med. Wochenschrift* an interesting series of papers on "The Employment and Action of Hypodermic Injections of Ergotin in Hemorrhage." After adverting to the difficulty which frequently exists in the treatment of hemorrhages that occur in the course of various diseases in the form of hæmoptysis, epistaxis, hæmatemesis, etc., he goes on to describe the results he has obtained from the employment of ergotin. This must be

regarded, he says, as the best of all hæmostatic agents for hypodermic use; and so long since as 1868 he recorded in his reports on the Rudolf-Stiftung the first essays that had been made with it. Since then Langenbeck and other surgeons have resorted to it with success for other forms of disease of the blood-vessels, as aneurism and teleangiectasis, as recorded in our own pages.

Confining himself within the scope of his own observation, Dr. Drasche first gives an account of the influence of injections as observed in two persons in robust health, the experiments being continued during nine days in the one case and six days in the other. Each injection was followed by a diminution in the number of the pulse by from four to six beats, and the sphygmographic markings exhibited a simultaneous contraction of the calibre of the vessels. The temperature was slightly increased, and the respiration continued normal. No influence upon the secretion of the urine was perceptible, and the health was quite undisturbed. Each injection was followed by some local irritation, which sometimes disappeared after a few minutes, but at others lasted a considerable time. The redness which was at first caused was followed by a grayish-yellow discolouration. Half-grain doses caused hardly any colouration, while two-grain doses induced intense and extensive redness. This, too, was accompanied by tenderness and swelling, this last continuing for several days.

The great bulk of the cases of disease in which Dr. Drasche has tried this means have been examples of hæmoptysis occurring in the subjects of tubercle. When this has been slight he has employed the usual hæmostatics; but, when these have not succeeded, or when the bleeding has been considerable, he has resorted to the ergotin. Of nine of these cases he furnishes abstracts. The ergotin was administered in these in doses of from one grain to one grain and a half, the whole quantity employed in each case varying from one grain to seven grains and a half, and the treatment by it occupying from one to six days. On one occasion three grains and three-fifths were injected within six hours and a half. In almost all the cases local irritation was induced, but this usually soon passed away. Sometimes a circumscribed induration remained for some time, but this never suppurated. In most of these cases the efficacy of the ergotin was very prompt when other hæmostatics had previously been tried without success; in others, although less speedy, it was still successful; and in one of them only did it fail. In two cases of epistaxis that are cited the effect was very speedy, and the dose required very small; and, although other means would have stopped the bleeding, none more simple could have been adopted. In a case of hæmatemesis the bleeding was arrested promptly after the internal administration of ergotin had been employed without any benefit. In a case of intestinal hemorrhage, occurring in typhus, the bleeding was completely arrested, but in another case it persisted. It has been used advantageously also in the hemorrhage connected with scorbutus, the amount and duration of the local irritation in these cases being considerable.

A general review of his experience with it convinces Dr. Drasche that ergotin is as efficacious as it is an easily employed remedy. In some cases its effects were so rapid and so remarkable that no doubt could possibly be held respecting them. Although if such effects are in many cases necessarily temporary, yet is the gain very considerable; and where it has been entirely without effect the extent and nature of the lesion offer the explanation. The injections, in fact, are an invaluable means when other agents have been tried without effect, or when sudden and profuse hemorrhage calls for instant action. The best vehicle for the ergotin is glycerine, and five grains to the drachm forms the most suitable proportion. A syringeful of this holds one grain of the ergotin, and, according to circumstances, the quantity may be injected once or twice a day. The entire quantity required amounted to a maximum of seven grains distributed over six days. On one occasion, however, six grains were injected within three days. The region of the pectoral muscles is the best locality for the injection. The mixture should be shaken before each injection; and this should be slowly performed, in order to avoid throwing the fluid into the cellular tissue, and inducing localized capillary hemorrhage. The subsequent handling of the injected part should be effected in the gentlest manner. More or less local pain and irritation follow each injection, and these are some-

times considerable. This sometimes depends upon the more or less intimate mixture of the ergotin with the glycerine, and the manner in which the injection is performed. Circumscribed inflammation at the injection points is also not uncommon, but the infiltration afterwards disappears. When the injections have been long continued, or have been too strong, tingling of the fingerends and cramps of the hands are sometimes complained of.—*Med. Times and Gaz.*, Nov. 16, 1872.

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35. *Case of Acute Rheumatism with Cerebral Symptoms and High Temperature, Treated Unsuccessfully by Cold Affusion.*—Dr. Southey related to the Clinical Society of London (Oct. 11th) a very interesting case of this in a well-built man aged 35, of highly nervous temperament, in the habit of drinking wine and beer, but not intemperate. This was his first attack of acute rheumatism. The rheumatic articular inflammations were not established until after he had been ailing for fourteen days, with a temperature ranging between 100° and 102.5°. The rheumatic symptoms were well marked. The invasion of several joints with swelling and redness, the tongue, the pulse, and the sweating were highly characteristic. On the eighteenth day of illness pericarditis set in, the joint-inflammation suddenly subsided, and delirium of a peculiar kind, preceded by head-pain and obscurity of vision, presented itself; the temperature now ranged between 104° and 105° in the axilla for ten days, while twelve grains of quinia, from six to ten ounces of brandy per diem, and various opiates, as well as chloral, were administered with little sedative effect. Bronchial symptoms now ensued, with great failure of power, although food and stimulants were freely taken. Delirium, akin to coma vigil, still continuing, and his temperature marking 105°, the patient was immersed in a bath quickly cooled down from 96° to 71°. The effect was immediate dissipation of delirium, with reduction of temperature to 100.5°, followed by short repose; but, the bodily temperature quickly rising again, he was maintained wrapped in a wet sheet exposed to the air of the room at 65° for an hour. After this his temperature fell and remained between 101° and 102° for two days. Some rest was now obtained, the pulmonary symptoms relieved, and respirations fell from 36 to 28 per minute. Subsequently, the wet sheet was frequently employed, on four occasions as often as three times in the twenty-four hours, with invariable relief of the delirium and subsultus. From the eighteenth day of his illness up to the fortieth, quinia was given in doses varying from twelve to twenty-four grains in the twenty-four hours, as well as brandy, from four to ten ounces, without noticeable good or ill effect. On the thirty-third day of his illness his temperature fell spontaneously to 100.5°; he was then quite rational for twelve hours, and there was a slight return of the rheumatic pains in the joints, which lasted, however, only for a few hours. The patient gradually sank with low broncho-pneumonic symptoms on the forty-second day of his illness. The post-mortem examination revealed that swollen condition of the glandular viscera ordinarily discovered after all acute febrile diseases, but no turbercle anywhere in the body, and no apparent mischief in the brain or its membranes. The author of the communication considered the case one of cerebral rheumatism, and thought that the cold water treatment had prolonged life and relieved the delirium.

Dr. Wilson Fox thought the relation of temperature to delirium exceedingly interesting. This was almost the first case of cerebral rheumatism which had proved fatal with the cold water treatment. The temperature of the patient was comparatively low for cold affusion. He considered that they had better not adopt any active treatment in these cases until they should see whether nature was to prevail and the temperature fall of its own accord. We often see cerebral symptoms come and go with low temperature; and, on the other hand, we often have high temperature and no delirium. He thought it better, in such cases, to wait until there was a high temperature—say 107°—before applying the cold water. Cerebral symptoms did not of themselves threaten a fatal issue; no more did a temperature of 105°. He would wait until a temperature of 106° was passed, or even 107°. There were no deaths recorded under 109°, and a temperature of 106.5° had been recovered from naturally. Bronchial

complications did arise after cold water, but they might arise from the high temperature itself. He felt some little doubt of the propriety of using cold water in typhoid till after the study of the records, which showed that bronchial complications occurred as frequently without it.

He said we had yet a good deal to learn with regard to the use of cold in such cases. There seemed to be two kinds of them. In one the reduction of temperature followed immediately on the bath, and was permanent; in other cases there was a long-continued attack of fever, requiring long-continued bathing. In these he would only use cold as a means of treating hyperpyrexia, leaving the disease to run out, or act on it by other remedies. If the high temperature returned, it might be well to wait to see if it would fall of its own accord.—*Med. Times and Gazette*, Oct. 19, 1872.

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36. *Tic Douloureux treated by Local Application of Ice.*—W. WINTERNITZ, according to the *Centralblatt f. d. Med. Wissenschaften*, No. 30, 1872, states that, at the advice of a colleague, he treated, by the local application of ice, an obstinate case, in a female, of neuralgia of the right side of the face, which had resisted all the various remedies that had been perseveringly employed. A piece of flat, smooth ice was applied to the entire painful side of the face, for five minutes at a time, at first at short intervals, gradually prolonged. The painfulness of this procedure may be lessened by the patient holding in the mouth a portion of some alcoholic fluid, which causes a glowing sensation in the cheek. After twelve hours the pain in the lady's face had disappeared, and had not returned during the ten months which had elapsed at the date of Dr. W.'s report.—*Mittheilungen des Aerztlichen Vereins Wien.*, Bd. V. No. 7, 1872.

D. F. C.

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37. *Hypodermic Injection of Quinia in Heat Apoplexy.*—Mr. A. R. HALL, Assistant Surgeon Royal Artillery, states (*Indian Med. Gaz.*, Sept. 2, 1872): "I think that all the well-known symptoms of heat apoplexy are produced by *intense nervous exhaustion*, and that it is a pathological condition closely allied to the *secondary fever* of cholera. I have seen the utmost benefit result from the hypodermic injection of quinia in insolation, where actually moribund patients have been saved by it. I would employ the same remedy in the *secondary fever* of cholera. In the number of the *Indian Annals of Medical Science* for March, 1870, I brought forward the theory that in the *collapse* of cholera there is very great *irritation* of the sympathetic nervous system. I recommend for that condition the hypodermic injection of pure sedatives." Mr. H. thinks that in the hypodermic injection of quinia we have the remedy for heat apoplexy.

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38. *Treatment of Snake-bite.*—Dr. FAYRER in his magnificent work on the Thanatophidia of India shows the utter inutility of the so-called antidotes against the bite of poisonous Indian serpents, and summarises as follows all he thinks can be done in cases of this kind:—

"Apply at once a ligature or ligatures at intervals of a few inches, as tight as you can possibly tie them, and tighten the one nearest to the wound by twisting it with a stick or other such agent. Scarify the wound and let it bleed freely. Apply either a hot iron or live coal, or explode some gunpowder on the part, or apply either carbolic or some mineral acid or caustic. Let the patient suck the wound whilst you are getting the cautery ready, or if any one else will run the risk let him do it. If the bite be on a toe or finger, especially if the snake has been recognized as a deadly one, either completely excise or immediately amputate at the next joint. If the bite be on another part, where a ligature cannot be applied, or, indeed, if it be on the limbs above the toes or fingers, cut the part out at once completely. Let the patient be quiet. Do not fatigue him by exertion. When or even before symptoms of poisoning make their appearance give eau de luce, or liquor ammoniæ, or carbonate of ammoniæ; or, even better than these, hot spirits and water. There is no occasion to intoxicate the person, but give it freely, and at frequent intervals. If he become low, apply sinapisms and hot bottles, galvanism, or electro-magnetism over the

heart and diaphragm. Cold douches may also be useful."—*Brit. and For. Med.-Chir. Rev.*, Oct. 1872.

39. *Treatment of Snake-poisoning by Artificial Respiration.*—Dr. J. Fayrer, who has so frequently experimented with snake-poison, writes to the *Indian Med. Gaz.* (Oct. 1, 1872), that since his return to England he has made some further observations on the action of cobra-poison.

"In the third experiment—the most interesting—a large, vigorous fowl was poisoned by injection of a couple of drops of the poison, diluted with water, into the thigh; it evinced the usual indications of poisoning, fell over with its beak resting on the ground, and went into convulsions—the comb and wattles becoming quite livid. At this stage the trachea was opened, a tube introduced, and artificial respiration commenced; as the blood became aërated, the lividity of the comb and wattles gave place to a bright florid tinge, and the convulsions ceased.

"On ceasing to inflate the lungs, the comb and wattles became livid again, and the convulsions recurred.

"This was repeated many times, always with the same result, until the artificial respiration was stopped, when convulsions due to non-aërated blood (asphyxia) closed the bird's existence.

"This seems to indicate the possibility of life being preserved, if respiration could be kept up long enough to allow of the elimination of the poison by natural, *aided* by artificial means. Whether the injury done to the nerve-centres by the presence of the poison be of such a nature as to be irremediable, I cannot say (in severe bites I should fear it is); but evidently from this experiment, which I hope to repeat, benefit may be hoped for from artificial respiration; and I beg of you to notice this, that those who have the opportunity in India may repeat the experiment and test its efficacy further."

SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

40. *Facial Carbuncle.*—This disease is happily a rare one, but still sufficiently common to have attracted the attention from time to time of several surgical authorities abroad. Its importance leads the Editor of the *Lancet* (October 5, 1872) to make a few remarks. "There is no means of distinguishing, in the initial stages, between the simple and benign kinds of furunculoid inflammation of the face, and that highly dangerous and often fatal form to which we are now referring. The affection commences most frequently by far, but not exclusively, in the neighbourhood of the upper lip, as a vesicle or pimple which, in the course of a few days, from solid œdema, develops into a large dusky-red induration. Its growth is attended with extreme pain, and leads to great deformity of the features. The areolar tissue becomes disintegrated, and, as in ordinary carbuncle, pus is also a product in an advanced state of the disease. A short and clear account of facial carbuncle, from the pen of Mr. Thomas Smith, is contained in the fifth volume of Holmes's System of Surgery. One of the earliest writers in this country to call attention to it was Mr. Harvey Ludlow, who, in common with others that saw some of the cases which he described, decided against the disease being malignant pustule or charbon, from which it differs in several very important features—as, for instance, in the pain and suppuration attending its progress, as well as in the nature of the morbid changes of the part affected. Constitutional symptoms of a low type commonly manifest themselves in the course of a few days, and often very unexpectedly, and out of all proportion to the local disease. Rigors, fever, and other manifestations of pyæmic infection are the precursors and cause of the fatality of carbuncle in this part; and it forms an interesting subject of inquiry whether there are any anatomical or other reasons which can account for their occurrence. Güntner, in describing some cases of carbuncle

of the face, remarks that the short, stiff, connective tissue of the lips, nose and septum narium specially favours the early occurrence of thrombosis. Be this as it may, the connection of the facial vein with the ophthalmic and jugular veins, and the great vascularity of the part, offer facilities for the introduction of any infective materials into the cerebral sinuses and general circulation. In a case that came within our observation many years ago the initial manifestation of the disease was an irritable-looking pimple on the left side of the upper lip. This was followed by œdematous swelling of an erysipelatous character. Rigors and constitutional symptoms of a febrile type appeared, with chemosis and protrusion of one eye-ball from an intra-orbital abscess, acute pulmonary disease, paralysis of upper extremity, and much swelling of one side of the neck. A post-mortem examination discovered pus in the orbit, and a puriform matter in the ophthalmic vein and cavernous sinus and internal jugular vein, with softening of the cerebral substance and pneumonia. The patient was a young married woman, living in a healthy position, and no cause could be discovered to which the occurrence of the disease could be attributed."

41. *Early Syphilitic Affections of the Osseous System.*—Dr. MAURIAC, of the Hôpital du Midi, has just terminated the publication, in the *Gazette des Hôpitaux*, of an elaborate series of papers under the title of "Precocious Syphilitic Affections of the Osseous System." The following are his general conclusions:—

"1. Epicranial periostites constitute one of the primary manifestations of syphilis, appearing sometimes a few days after an infectious chancre, and before the secondary symptoms. 2. Their exclusive seat seems to be in the periosteum of the cranium, and, if a hyperæmic or inflammatory lesion of the bone exists, this is accessory and subordinate to the periostitis. 3. This periostitis is a true inflammatory process, as shown by the acuteness of the symptoms and the rapidity of their course. 4. In the acquired syphilis of the adult this kind of tumour of the cranial periosteum has a decided tendency to resolution, disappearing speedily, without leaving any traces. 5. In children the subjects of hereditary syphilis these tumours are much more disposed to pass into a state of suppuration. 6. The pain produced in them radiates from a fixed point, as in neuralgia. 7. They may be either separate or confluent, and are chiefly situated at the anterior part of the cranium; and their duration, if left to themselves, varies between four and six weeks. 8. Periostites may also be produced at the commencing period of syphilis, on the ribs and their cartilages and the sternum. 9. Like the pericranial, they are inflammatory, and disposed to resolution, and are the seat of fixed pains, with neuralgic irradiations. 10. In this way they may induce dyspnœa, although 'syphilitic asthma' may be due to various other causes. 11. Other portions of the osseous system, especially the tibia, may occasionally become affected in the same way. 12. Counting the commencement of the incubation of these lesions from that of the infecting chancre, this will be found to vary from 15 to 120 days. 13. The periostites may be manifested some days prior to the appearance of secondary cutaneous and mucous affections; and they appear spontaneously, without the intervention of any provocative cause. 14. They are more common and more serious in hereditary than in acquired syphilis; and they are oftener met with among the Arabs in Africa and the inhabitants of South America than in Europeans. 15. The periostites of the long bones are usually attended with less irritation than those of the pericranium. 16. They may disappear spontaneously, but they do so much more rapidly under the influence of a combination of mercury and iodine and local antiphlogistics. 17. They aggravate the prognosis of syphilis, although they usually coincide with but slight manifestations in other organs, and imply no malignity in either the local process or in the general tendency of the constitutional disease."—*Med. Times and Gaz.*, Oct. 12, 1872.

42. *Fall of Temperature accompanying great Wounds by Fire-arms.*—By PAUL REDARD. Though the increase of temperature of the body above the standard of health has attracted so much attention, the reverse phenomenon

has not been sufficiently studied. Brown-Séquard, however, has shown that, when in illness, or after wounds or poisoning, the temperature falls a certain number of degrees, there is danger of death solely as a consequence of the fall.

Long-continued exhausting discharges, want of sufficient nourishment, and hemorrhage, have been observed to produce this fall of temperature; but in a more marked manner has it been seen to follow extensive burns, and to occur in uræmia, in sudden ammonia blood-poisoning, in certain cases of septicæmia, sometimes in chronic peritonitis, in internal strangulations and wounds of the intestines (Demarquay), immediately after apoplectic seizures (Charcot), generally in lesions of the spinal cord and in compression of the brain as in hydrocephalus. Hirtz gives as a pathognomonic sign of tuberculous meningitis a fall of temperature coming on at the prodromic period of the malady. A fall of temperature has also been observed after the termination of fever, pneumonia, &c. (the defervescence of Traube), and in various maladies which impede the circulatory and respiratory functions. The administration of digitalis and of tartar emetic has the same affect; alcohol, as a veritable retarder of molecular interchange, causes frequently a considerble fall of temperature; in the acute stage of drunkenness M. Redard has often observed a temperature of 36° (96° 8′ Fahrenheit).

Placed during the latter period of the French war—the struggle between the regular army and the Federals—in the ambulances "*de la Presse*" (in the service of his master, M. Demarquay), M. Redard had ample opportunities of noticing the effect of injuries by fire-arms in lowering the temperature; every time a patient suffering from a grave wound from a fire-arm was observed by him, a lowering of the temperature of the body was found. In most of the cases the injuries had been inflicted by the bursting of shells, but in some they had been caused by cannon-balls shattering limbs, and in the instances of the Federals the wounds had usually been received while they were in a state of intoxication. In such M. Redard found a wound produced a much greater fall of temperature than did one of equal extent in men of temperate habits, and in them amputations were most unsuccessful. He, therefore, quite indorses the dictum of M. Verneuil, that the prognosis of traumatic lesions, all other things being equal, presents an exceptional gravity amongst subjects addicted to drinking chronically. The author narrates his observations in fifty cases, and concludes his memoir with the following deductions:—

"1. In great injuries by fire-arms fall of temperature is a constantly observed fact.

"2. Several elements come into play in producing this fall. Amongst the principal we will mention—nervous shock, the excitement of the combat with consecutive stupor, hemorrhage, and, lastly, alcoholism.

"3. Every wounded man brought into an ambulance with a grave wound, which seems to necessitate an operation, and who shows a temperature below 35° 5′ (95.°9 Fahr.), will die, and ought not consequently to be operated on.

"4. Every wounded man in whom a salutary reaction is not produced within four hours, and by whom the reaction is not a direct sequence of the fall of temperature, must be considered as very gravely injured.

"5. Burns give rise to an exceptionally great fall of temperature.

"6. The same is the case in wounds of the abdomen. The fall is the more marked the nearer the wound approaches the stomach.

"7. The diagnosis of penetrating wounds may become less difficult, on account of the characteristic thermometric phenomena to which they give rise.

"8. The state of intoxication in which the wounded are sometimes found favours singularly the observed fall of temperature.

"9. Wounds by shells, all other things being equal, produce a fall of temperature more accentuated than those by balls."—*Dublin Journ. Med. Science*, Sept., 1872, from *Archives Gén. de Méd.*

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43. *Hypertrophy of the Tongue.*—G. Maas, in a communication which appeared in the *Archiv f. Klin. Chirurgie*, No. 3, Band. XIII., states that, during the year 1871, there had come under treatment at the "Surgical Clinic"

at Breslau, five cases of hypertrophy of the tongue, which had been present from birth. The enlargement was either of the whole tongue or of only one side. In one case of hypertrophy of the left side of the organ, the enlargement was the result simply of an abnormal growth of the proper tissues. All five cases were successfully treated by excision of the hypertrophied parts by the "galvanic caustic noose." A microscopic examination of enlarged portions showed, in one case, that of a two year old child, that there was simply a hyperplastic condition of all the normal tissues. In the others there was an immense new formation of cellular tissue and bloodvessels, so that the lingual enlargement presented to the feel a spongy cavernous mass. This occurred to the least extent in a child three years old, to a greater extent in one of twelve years, and to the highest extent in a patient twenty-one years old. Hence, Surgeon Maas concludes that in all cases of hypertrophied tongue, the enlargement is at first hyperplastic, the new formation of cellular tissue and vessels being induced subsequently by constant irritation, caused by dragging of the enlarged tongue beyond the mouth.—*Centralblatt f. d. Med. Wissenschaften*, July 13, 1872. D. F. C.

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44. *Osteo-Myelitis in relation to Purulent Infection.*—M. DEMARQUAY (*Archiv. Gén.*, Sept. 1872), after describing his clinical experience aud experimental investigations concerning this subject, states that he has proved that pus, whether in a pure or altered condition, when introduced into the medullary canal of bones, induces osteo-myelitis, and determines death by pyæmia or septicæmia, according to the condition of the fluid injected. The symptomatology and the necroscopic results are the same as when similar conditions are induced by injecting the veins themselves. Such experiments, as well as clinical observations, only establish coincidences, and it becomes necessary to demonstrate that there is an easy passage from the medullary canal into the venous system. This is shown to be the case by drilling an opening into the medullary canal between the condyles of the femur in a rabbit, through which, by means of an Anel's syringe, the whole animal may be injected. So also an injection carefully made into the canal of a human bone issues by the veins at the end of the diaphysis. In the future study of osteo-myelitis, the condition of the veins emerging at the extremities of the affected bones should be carefully examined.—*Med. Times and Gaz.*, Oct. 26, 1872.

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45. *Third Series of Fifty Cases of Ovariotomy.*—Mr. T. KEITH, of Edinburgh, who has now performed ovariotomy one hundred and fifty times, with eighty-four recoveries in the last one hundred operations, has just published (*Lancet*, Nov. 16th, 1872) a statistical table of his third series of fifty cases. This table shows eight deaths in the fifty cases. Two died from obstructed intestine, one from acute septicæmia, and five from peritonitis. In two of these adhesions were considerable, in one moderate; while in five the tumours were non-adherent.

In nearly all the fatal cases the general condition of the patient was bad. They were all poor women, pretty much worked out, though the tumours were of only moderate size. The result in the 106th case was very disappointing. Everything was most favourable for a successful termination, yet the patient died from diffuse peritonitis, in a way I never saw before nor since.

In six of the fatal cases the clamp was used. In one, catgut ligatures to one ovary and clamp to the other; in another, the long ligatures of Dr. Clay. In nearly one-third of the cautery cases bleeding took place from large vessels, and ligatures were necessary. Many of the cases had been tapped once or oftener; and, as a rule, a manifest improvement in the general health followed the tapping. One had been tapped twenty times, another fourteen times, before operation, yet both made excellent recoveries. Only one of the fatal cases had been tapped. It was that of a young girl dying from a suppurating cyst. Ovariotomy was performed a few days after, but it did not save her. Yet in this series, in other five as hopeless-looking cases of suppurating cyst with septic fever, operation was perfectly successful.

Except that the cautery has sometimes been used in dividing the pedicle,

there has been little change in the way of operating or in the general management of the cases since last report. During the operation perhaps more care than ever is taken to tie every bleeding point; and it need hardly be added, that Lister's animal ligatures are now used. After operation the same precautions are taken in restricting the giving of food and stimulants, especially food.

As an anæsthetic, pure, dry sulphuric ether (Macfarlane's) made from methylated alcohol is always used, and with the best results, especially in the very feeble women. Of one hundred cases in which sulphuric ether has now been given, there have been only thirteen deaths.

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46. *Ovarian Dropsy operated on during an attack of Acute Peritonitis.*—Dr. Richard T. Tracy communicated to the Royal Medical and Chirurgical Society (Oct. 8, 1872) a case of this. The subject of it was æt. 31, married five years; mother of two children. The patient had noticed the tumour fifteen months. When first seen she was in a hectic condition, with a rapid and feeble pulse, and suffering great pain from the enormous distension of the abdomen. Some relief was at once obtained by tapping and drawing off two quarts of thick colloid fluid (the tumour was multilocular). After the tapping she was removed to the hospital, and carefully examined. She measured thirty-eight inches in circumference, nine inches from the ensiform cartilage to the umbilicus, and eight inches and a half from the umbilicus to the pubes. Her stomach was very irritable, and she had to be supported by nutrient enemata. Her temperature was 102°; pulse 120; the abdominal tenderness extreme. As it was evident she would soon sink unless something could be done to relieve her, ovariotomy was performed on March 19. The tumour was multilocular, semi-solid, and almost universally adherent; the peritoneal surface was deeply congested, much thickened, and full of flaky lymph, which was removed in large quantities. The pedicle was secured with a clamp, and the wound closed by deep silk sutures and superficial ones of horsehair. Two hours after the operation there had been a considerable fall in the temperature. On the fourth day there was a large escape of gas and fetid fluid from the wound, and from this time recovery was rapid and finally complete. The author expresses his opinion in favour of bichloride of methylene as an anæsthetic, and recommends the extra-peritoneal treatment of the pedicle by the clamp wherever it is practicable.—*Med. Times and Gazette*, Oct. 19, 1872.

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47. *Aneurism of the Subclavian Artery cured by Injections of Ergotine and Digital Compression.*—The aneurism developed rapidly, and sixteen injections of ergotine were made in the space of six weeks. From the time the fourth injection was made, there was a marked diminution of the tumour. Digital compression was then employed for six hours every day, during six days. The beatings of the tumour then ceased, and five months later there were left no signs, objective or subjective, of the aneurism.—*Lancet*, Nov. 23, 1872.

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48. *Use of the Capillary Aspirator.*—M. Léon Labbé, Surgeon to the Hôpital la Pitié, contributes to the *Practitioner* (Oct. 1872) an interesting article on the puncture of the bladder performed in the hypogastric region by means of the capillary trocar and pneumatic aspiration.

The value of the operation is based upon the fact that, when once the bladder is emptied, and consequently the normal relations of this organ re-established, and when the tenesmus of the whole region is overcome, it becomes *generally* possible in a short time (a few hours, a day, two or three days) to re-establish the course of urine through the normal passages, whether the cause of the retention be due to traumatisms of the urethra, hypertrophy of the prostate, false passages produced by the hand of the surgeon, or very narrow strictures of the canal.

The knowledge of these facts naturally encouraged surgeons to seek for an operative proceeding by means of which they might carry out the leading indication, namely, *to empty the abnormally distended bladder, and to gain time, so as to re-establish the natural passages without, if this be possible, causing the patient to run the risks of a serious operation.*

M. Labbé relates six cases in which the aspirating puncture, according to the method of Dr. Dieulafoy, was successfully employed for emptying the abnormally distended bladder, and from the facts given draws the following conclusions:—

1. That capillary hypogastric puncture is a perfectly harmless operation.

2. That in all cases it must be substituted for ordinary hypogastric puncture.

3. That in a great number of cases it may, when only once practised, allow the surgeon to penetrate afterwards into the bladder through the natural passages.

4. That in certain cases where catheterism is impossible, it may be performed three or four times a day without any injurious effect, and thus permit the surgeon to gain time and restore the natural passages; and at the very least it constitutes a palliative means of the highest importance.

In the *Tribune Médicale* (Oct. 13, 1872), Dr. DIEULAFOY relates ten cases of retention of urine successfully treated by him by the capillary aspirator. In these ten cases fifty-six punctures were made without any unfortunate results. In one case, that of a man aged 72 years, twenty-three aspirations were resorted to in eight days. Dr. D. considers the innocence of the capillary puncture of the bladder in retention of urine as now established.

In a later No. of the journal just quoted (Nov. 10), Dr. D. reports three cases, one of scrofulous abscess of the glands of the neck, cured by seven operations with the capillary trocar; one of a large hygroma of the knee, cured by two operations; and one of hemorrhagic pleurisy, relieved by a single aspiration.

We find also in the last named journal, quoted from the *Gaz. Méd. de Strasbourg*, Aug. 1, 1872, a case of strangulated crural hernia reported by Dr. WATCHER, of Ernstein. In this case there was great suffering, which was relieved by the withdrawal of half an ounce of sanguinolent fluid of a fæcal odour. Though the hernia was irreducible, the patient was relieved of her sufferings and was able to return to her work.

Dr. CHAUVEAU reports in *Tribune Médicale* two cases of strangulated hernia successfully treated by the capillary aspirator. In both cases puncture of the intestine gave issue to a coloured liquid and to a certain amount of gas; in both cases reduction by means of taxis took some time to be effected (ten minutes in one instance), and required some degree of exertion. Cure took place very rapidly, and both patients were able to resume their work twenty-four hours after the puncture.

Dr. DIEULAFOY has communicated to the Surgical Society of Paris nineteen cases of dropsy of the knee, in which puncture with the capillary aspirator had been performed sixty-five times without any ill consequences. The character of the fluid withdrawn varied, and was sometimes purulent or bloody. Dr. D. stated that he never resorted to this practice in cases of bloody effusion complicating fracture of the patella.

Dr. CHAIROU communicated to the French Academy of Medicine (Oct. 22, 1872) a case of capillary puncture of the pericardium in a young soldier affected with symptoms of dropsy of the pericardium, a sequel of an attack of pleurisy. A large quantity of sero-sanguinolent fluid was drawn off, which quickly gelatinized. No accident followed, and the next day he was lounging about the passages of the hospital.

Notwithstanding the above array of evidence, some surgeons of the highest authority do not admit that the use of the capillary aspirator is free from danger in all cases.

M. DUBRUEILH communicated to the surgical society of Paris (*L'Union Médicale*, Oct. 29, 1872) a case of fracture of the patella with large effusion of blood into the joint, in which he twice resorted to puncture with the capillary aspirator without succeeding in drawing out any of the blood. This operation was followed by very serious consequences—purulent arthritis—and a fatal result was anticipated. In the discussion which followed the reading of this case MM. Chassaignac, Verneuil, Despres, Guyon, Trélat, Marjolin, Larrey, and Le

Fort united in proscribing the use of the capillary aspirator, except for special indications and when absolutely required.

49. *Excision in Gunshot Wounds.*—M. Ollier read an interesting paper on this subject at the late Medical Congress at Lyons. He observed that his remarks would be confined to injuries of the upper extremity. During the late campaign he had systematically abstained from excision of the bones of the lower extremity, the transport of the wounded being so bad that amputation was always the preferable operation. But at any time he is no strong advocate for excisions of the lower limbs, preferring expectation as a general rule for the hip, and almost always amputation for the knee. Excisions of the ankle usually succeed better than those of the other bones; but even with regard to these expectation is often the better practice.

It has been objected that in gunshot wounds the periosteal sheath cannot be retained; but this is an error, for, however crushed the bone may be, subperiosteal excision can be performed with almost as much regularity as when the bone remains intact—the periosteum being detached from each fragment in succession. This arises from the fact that while the bone, being fragile, breaks, the supple and resisting periosteum yields without rupturing. In aged subjects, however, it is adherent, and is easily torn away with the fragments.

During the late campaign M. Ollier performed subperiosteal excision of the elbow seven times. In one case fatal hemorrhage, caused by an unperceived section of the brachial artery, came on on the twelfth day. In two cases there was complete anchylosis, in consequence of the apparatus having been retained too long a time without the necessary movements having been imparted. The four other cases had complete articular reproduction, and possessed active extension and flexion of the forearm, without lateral movements. In one of the cases these last existed to a slight extent, but without impeding the functions of the limb.

The question of the indications is sometimes a delicate one. If the elbow-joint be largely opened, and there is notable loss of soft parts, amputation is the sole resource; but if the soft parts remain sufficiently intact, excision may be performed, howsoever great is the lesion of the bone. The indication is precise when the fissures do not extend beyond a fourth of the shaft of the bone, but is less positive if these extend to the half of its length. As a very general rule it is the state of the soft parts which determines the indication. The most difficult cases to decide upon are those in which there is a small wound of the joint and the bone. Expectation may produce a cure by anchylosis, but there is considerable danger of death from purulent arthritis; and excision, while it gives rise to very much less pain, is also less dangerous than purulent arthritis. When arthritis supervenes, and especially when the wound is small, the pains are fearful, and the large opening caused by excision at once assuages them. The indications for excision in the continuity of bones are less peremptory than are those for articular lesions. When the humerus is traversed and broken into numerous fragments, expectation should still be the rule. M. Ollier performed excision in only three such cases, and "expected" in more than twenty. When the fragments are considerable, we cannot tell where they extend to until after exploration under anæsthetics. If, after removing those of them which are loose, there is no fissure, it suffices to render the limb immovable; if there are fissures, each fragment should be caused to project, so that it may be examined. When with the fissure there exists a detachment or laceration of the medulla, the limits of this should be ascertained, and the bone removed at its level; in fact, it is the condition of the medulla that is to be taken into account rather than the fissure itself, and especially in young subjects.

In treating the case afterwards, we should bring the ends of the bones nearer to each other in proportion as we rely less on regeneration. In a child the entire sheath may be retained; but in older subjects upon whom primary excision has been performed, not more than three or four centimetres must be allowed to intervene between the ends, and often less. The *oauto-silicaté*

bandage is the best, rendering the limbs immovable, and allowing of the easy transport of the patient.—*Med. Times and Gaz.*, Oct. 26, 1872.

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50. *Resection of Knee-joint shattered by a Gunshot Wound.*—RITZMANN relates a case of gunshot wound of the knee, in which Professor König, two and a half months after the receipt of the wound, resected the joint. The ball was found still imbedded in the shattered external condyle of the femur. The patella was not removed in the operation; entire bony anchylosis ensued.—*Centralblatt f. d. Med. Wissenschaften*, 1872, No. 32; from *Berlin. klin. Wochenschr.*, 1872, No. 23. D. F. C.

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51. *Anchylosis of the Lower Jaw—A False Joint successfully formed on both sides.*—In a man, twenty-seven years old, who, in the course of an attack of scarlet fever, which occurred in his seventh year, had suffered from an inflammation of the articulation of the jaw on both sides, resulting in complete anchylosis; it was evident, that, from the long time the jaw had remained immovable, a firm union had taken place between the bones of the two jaws at the place of the anchylosed joints. To form an artificial joint, a triangular portion of bone, with base downwards (after *Esmarch*), was excised; on the one side by *Middeldorpf*, and on the other, subsequently, by *Fischer*. The complete mobility of the jaw had remained up to the time the case was reported by Dr. *Maas*, a period of four months subsequent to the operation.—*Centralblatt f. d. Med. Wissenschaften*, No. 29, July 13, 1872. D. F. C.

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52. *Treatment of Traumatic Erysipelas.*—M. WILDE, in the *Deutsche Archiv f. klin. Med.*, 1872, states that, in a number of cases of erysipelas from wounds, he has seen much good to result from subcutaneous injection of sulpho-carbolate of soda. It was injected daily, at three or four points, along the edge of those portions of skin over which the erysipelas extends, by means of a *Pravaz's* syringe, with an occasional use of a solution—1 : 12—of the amorphous salts. By this treatment he has known the erysipelas to disappear entirely in three, or at the furthest four, days.—*Centralblatt f. d. Med. Wissenschaften*, No. 32, 1872. D. F. C.

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53. *Obstinate Recurrent Neuroma after Amputation; Cure by Electropuncture.*—A case is related by GIRARD, in which, subsequently to an amputation of the right arm at the centre of the humerus, during the healing of the stump, a severe attack of neuralgia occurred; the pains extending along the forearm and hand, and, also, toward the breast. At a later period, cramps and trembling set in, the whole being the result of an excessively painful neuroma situated on the inner surface of the limb. After the fruitless administration of various narcotics and derivates, the tumour, composed, for the greater part, of fibres replete with nervous matter and nervous ramifications, was excised. Fourteen days subsequently the neuralgia recurred, and three, new, small neuromata appeared above the cicatrix caused by the operation, which were, by Prof. Lücke, extirpated with, as he believes, a portion of the affected nerve equal in length to 2–3 cm. Two months after this operation the neuralgia returned with increased severity—and three neuromata of the size of a hazelnut each again made their appearance over the cicatrix of the preceding operation. These were treated by electropuncture, with thirty-six small elemental needles, coated to their points. The operation was repeated three times, and continued at each for fifteen minutes; the tumours becoming, finally, insensible and scarcely to be detected. At the end of eight weeks after this last operation, there had been no return of either neuromata or neuralgia.—*Centralblatt f. d. Med. Wissenschaften*, July 6, 1872, from *Deutsche Archiv. f. Chirur.* Bd. 1, Heft 1. D. F. C.

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54. *Treatment of Syphilis by Hypodermic Injections of Calomel.*—Drs. PIROCHI and PORLEZZA have contributed a very important paper on the above to the *Giornale Italiano delle Malattie Veneree*. The authors have recorded fifty-five cases in which they made use of calomel in subcutaneous

injections, and they thus sum up the conclusions to which they have arrived: 1. Recurrence of the disease is less frequent with subcutaneous than with internal treatment. 2. Calomel is preferable to the sublimate and other salts of mercury which have been tried until now, on account of the less gravity and frequency of local and general accidents. 3. Injections with calomel should be performed on the external and central surface of the arm. 4. The syringe should be introduced with precision into the subcutaneous cellular tissue, and care should be taken that the point be not fixed into the thickness of the derm. 5. The best vehicle for the calomel is hydrate of gum-arabic. 6. The quantity of calomel used must vary between ten and twenty centigrammes (about two to four grains). 7. Painting with collodion is very effective. 8. There should be an interval of at least ten days between every two injections. 9. The injections should be discontinued if the first two produce little or no amendment. —*Lancet*, Nov. 23, 1872.

OPHTHALMOLOGY.

55. *Treatment of Strumous Ophthalmia.*—Mr. Henry Power, Senior Ophthalmic Surgeon to St. Bartholomew's Hospital, finds that general treatment is by no means sufficient to cure the patient, and amongst the many local remedies he has used, he gives the palm to atropia, in a two or four grain solution, Pagenstecher's yellow ointment, and calomel. With one or the other of these, most cases, he says, may be cured.

Cases, however, occasionally occur in which all these plans of treatment fail; and the question comes, what must now be tried? It is then that I claim attention to the value of extract of belladonna given internally. I have repeatedly found that it rapidly diminishes the intolerance of light, and by its power of relieving the spasm of the muscles closing the lids, enables the child to obtain an amount of benefit from air and exercise that was previously impossible. I can entertain no doubt that its good effects are attributable to its action as a stimulant upon the sympathetic system of nerves, and through this upon the smaller vessels. It is further of use in doing away with the necessity for purgatives, as even in small quantities it acts efficiently in clearing the bowels. I have usually prescribed it in doses of one-eighth to one-quarter of a grain. It is perhaps scarcely necessary to add that, as it is a potent remedy, its effects must be watched, and its administration should be suspended as soon as the child complains of thirst, or when the rapidity of the pulse is observed to be increasing. I have only noticed these symptoms in one or two instances. I have also found the extract of belladonna serviceable in cases where the affection was rather a limited keratitis than phlyctenular ophthalmia; that is, in which a small segment of the cornea was hazy and vascular near the margin, even though the intolerance of light may not have been very intense. I consider the seton, though recommended by so good an authority as Mr. Bader, a *pis aller;* and find the treatment mentioned by Dr. Swanzy as practised by Von Gräfe, though it was originally suggested by Jüngken, of dipping the whole head for a few seconds in cold water, not persistent in its effects.—*The Practitioner*, Oct. 1872.

56. *Evulsion of the Iris.*—Mr. W. H. Folker states (*Brit. Med. Journ.*, Oct. 5, 1872) that, while a man, æt. 42, was pulling at a piece of wood, a portion of it suddenly flew up, striking him in the right eye, making a wound in the outer and lower edge of the cornea. The anterior chamber had some blood in it, and chemosis was setting in; the eye was too painful at the time to allow of minute examination. Mr. F. at once applied atropia, and employed antiphlogistic treatment.

When all inflammation had subsided, and the corneal wound had healed, the iris was found to be completely torn away, a piece of the size of about two pins' heads only remaining at the corner of the wound. There was for a long time

great intolerance of light; which, however, has gradually subsided, and the patient is now able to bear any moderate amount of light. At the present time, the lens is perfectly clear. If anything, the eye is slightly contracted. On closing the other eye he can see, but cannot discern distinctly.

When tested with Jäger's types he could read nothing, but, looking through a circular hole, one-sixteenth of an inch in diameter, in a piece of dark paper, he could read Jäger No. 19. With a test-spectacle (No. 9) covered with the same piece of paper, he could read No. 16. When the hole in the paper was enlarged to the eighth of an inch he could not distinguish anything; and with neither aperture did any other spectacles suit him.

MIDWIFERY AND GYNÆCOLOGY.

57. *Recession of the Fœtal Head after Extraction from the Vagina.*—Dr. TABUTEAU communicated to the Dublin Obstetrical Society (June 15) the following case of this. In 1859, he was called to a woman, æt. 22, in her first confinement. She had, when he first saw her, been thirty hours in labour, under the care of a self-taught midwife. He found a face presentation with the chin to the pubis, the head low in the pelvis, and the parts fully dilated. After waiting some time and seeing no progress, he determined on applying the forceps. This he did without any difficulty, and in about five minutes he delivered the head, the chin resting below the pubic arch. In three minutes afterwards he found the head had entirely receded within the vagina. Dr. Tabuteau subsequently effected delivery, without difficulty, of a stillborn child. The recovery of the woman was rapid and complete.—*Dublin Journ. Med. Sci.*, Nov. 1872.

58. *Treatment of some Forms of Extra-Uterine Pregnancy.*—Dr. MEADOWS read a paper before the Obstetrical Society of London (Nov. 6, 1872) on this subject. Relating a case of the so-called ventral variety, he referred to some remarks made by him, and published in the last volume of the Transactions, in which he advocated more frequent resort to the operation of gastrotomy in certain cases of extra-uterine gestation, the object of the operation being to anticipate, and so to avert, the almost inevitably fatal rupture of the cyst, and death from hemorrhage. In the former communication the suggestion was also made that, with a view to prevent one of the great dangers attendant upon this operation—viz., hemorrhage—the placenta should not be removed, but should be left to undergo the slow but sure process of atrophy and absorption, it being argued that, as by the removal of the fœtus there is no longer any physiological necessity for that structure, its removal by atrophy might fairly be reckoned on. The present communication was based upon another case of so-called ventral pregnancy, which, coming under the author's care during his absence, had been seen by two of his colleagues at the Hospital for Women, Dr. Squarey and Mr. Scott, and a living child at about the seventh month was removed. The attempt, however, to remove the placenta, which was situate deep down in the pelvis, and the fœtal cyst was attended by such frightful hemorrhage that the patient succumbed in a few hours. Dr. Meadows now contended that in all cases where the diagnosis of a living and a viable child could be made out, gastrotomy ought to be performed; and that in order to facilitate the operation, and at the same time to diminish its danger, both the placenta and the containing cyst should be left *in situ*, special care being taken not to detach any portion of the placenta. In this way the operation might be reduced to a very simple process, and the chief care should be, first to extract a living child, and then to do as little damage as possible to the remaining structures, thus preventing hemorrhage, and enabling them afterwards to undergo the process of atrophy and absorption, just as occurs in some cases where, no operation having been performed, the fœtus has died, been mummified as it were, and finally been absorbed.

59. *Pelvic Hæmatoma.*—Dr. Snow Beck read to the Obstetrical Society of London (Oct. 2) a case of this with remarks especially as to the source of the hemorrhage.

A woman, aged forty, who had suffered from considerable dyspeptic symptoms, with severe hæmorrhoids, who had never been pregnant, and in whom the catamenia had always been profuse, suffered during the periods for the last two or three years from severe pain in the left iliac region. During the last period this pain had been very severe; it suddenly ceased, and a few minutes afterwards an oval lump resembling a duck's egg was perceived, firmly pressed against the abdominal wall in the left hypogastrium. This was the uterus. A soft elastic swelling existed between the uterus and the rectum, bulging forwards the posterior wall of the vagina, and presenting a soft depression directly behind the orifice of the uterus. No constitutional symptoms followed, nor anything to indicate inflammatory action. On the seventh day some dark-coloured clots and port-wine coloured blood passed with a gush from the rectum; the swelling gradually subsided, and the patient gradually became well. It was concluded that an effusion of blood had suddenly taken place amongst the loculi of the pelvic fasciæ, probably from the rupture of a congested pelvic vein. The sources from which the blood came in pelvic hæmatoma were considered to be (*a*) rupture of an ovary which had previously undergone some process of degeneration; (*b*) rupture of a Fallopian tube, or the escape of blood from the congested vessels of this part, in which cases the blood will be effused into the cavity of the peritoneum; and (*c*) rupture of some varicose veins. When the vein was situated in the broad ligament, the blood might be effused into the pelvic cavity or into subserous cellular tissue. When the vein was situated in the pelvis the blood was effused in some of the loculi formed by the pelvic fascia. The reputed source of the blood by regurgitation from the uterus through a Fallopian tube, consequent upon some disorder of the menstrual function, was considered highly improbable; and the cases upon which this opinion was founded were closely examined. There was no evidence of this in any of the cases collected by Bernutz and Goupil, except where there was permanent obstruction to the outward flow of the catamenia, and consequent distension of the uterus. And the evidence was equally unsatisfactory in the twenty-seven cases recorded by Dr. Barnes. Some of these cases, with the remarks upon them, were closely examined. In the treatment it was considered unnecessary to interfere where there were no constitutional symptoms, and the effused blood was evacuated by the rectum or the vagina in a short time. But when this fortunate course did not occur, as a general rule it was desirable to procure the artificial evacuation of the effused blood—when some weeks had elapsed without any signs of decrease in the swelling, when the swelling became more tense, more tender, and more painful, and when the temperature increased, the complexion became of a dirty-yellowish hue, the abdomen swollen and tense, when there were repeated shiverings, vomiting, rapid pulse, etc. The evacuation might be effected by a curved trocar passed in towards the centre of the swelling, or by free incision into the tumour. As a rule, the rectum was to be preferred to the vagina as the place for the artificial evacuation.—*Lancet*, Oct. 26, 1872.

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60. *The Dangers of Operations on the Neck of the Uterus.*—M. Alph. Leteinturier (*Archives Gén. de Méd.*, Sept. 1872) draws the following conclusions from his observations: 1. Operations (even when slight) upon the neck of the uterus may prove the *point de depart* of serious affections. 2. In such cases, more or less ancient lesion of the uterine annexes is discoverable. The operation seems, so to speak, to awaken the old inflammation. 3. Three circumstances may be referred to as favouring and explaining this: 1. A partial lymphangitis, commencing at, and spreading from, the neck of the uterus. 2. General congestion of the pelvic organs. 3. A congestion localized in some part of the genital system, occasioned by a reflex action originating in the cervix.—*The Practitioner*, Oct. 1872.

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61. *Fibrous Tumours of the Uterus.*—M. Demarquay, on behalf of a com-

mittee, made a report to the French Academy of Medicine (Oct. 29, 1872), relative to a memoir of M. BOINET'S on fibrous tumours of the uterus, the different changes which they may undergo, the errors which may be committed in their diagnosis, and finally the propriety of extirpating abdominal tumours originating in the uterus and designated fibrous tumours or fibro-cystic tumours.

The reporter discussed the question of the propriety of gastrotomy in such cases, and stated that in 20 operations, there were 8 cures and 12 deaths; a much larger mortality than from removal of ovarian cysts. The cause of death in these cases was almost always hemorrhage, peritonitis, phlebitis, etc. It is proper to state that up to 1860 and 1862, most of the operations of this kind were performed through errors of diagnosis; surgeons believing that they had to do with ovarian cysts, instead, as was the case, with fibro-cystic tumours of the uterus. Since 1862 surgeons have performed partial or complete ablation of the uterus with a full knowledge of the nature of the case.

An incomplete table of the results of this operation up to 1866 shows 42 cases of partial ablation of the uterus, of which 33 terminated fatally and 9 successfully. The cause of death has been most frequently hemorrhage and peritonitis. Notwithstanding this success M. Boinet condemns this operation and criticizes the results obtained. M. Demarquay indorses the opinion of M. Boinet.

In fact, fibro-cystic tumours of the uterus may remain long stationary and ultimately become atrophied; they are in fact compatible with life, which ovarian cysts are not. It is only exceptionally that these cysts become largely developed and endanger life. The extirpation of an uterine tumour, whatever its size, is always a serious matter, at least unless it has a long and slender pedicle, which then approximates it to an ovarian tumour. Even in cases where the life of the patient is endangered, M. Demarquay concurs with M. Boinet in condemning the operation for the following reasons: 1. The uncertainty that exists as to the completion; 2. The risk of fatal hemorrhage; 3. The duration of the operation; 4. The serious consequences—nervous shock, peritonitis, secondary hemorrhage—death. The success obtained by different surgeons, among others MM. Kœberlé, Péau, etc. proves nothing. The reporter maintains that we require conscientious statistics embracing a number of well-defined facts.—*L'Union Médicale*, Oct. 31, 1872.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

62. *Antagonism of Strychnia and Chloral.*—M. ORÉ presented to the Academy of Sciences a new work on this subject. He finds—1. That not only does the intravenous injection of 1 milligramme of strychnia (a fatal dose for a rabbit of 4 lb. weight) fail to prevent the animal from succumbing to the influence of 4 grammes of chloral, but the presence of the alkaloid does not manifest itself by any characteristic phenomena. 2. The injection of 2-5 milligrammes of strychnia produces well-marked convulsions. In one case it appeared to retard the death of the animal, without, however, preventing it; for it died with all the symptoms of chloral poisoning. 3. In proportion as the dose of strychnia augments (3.45 milligrammes), death occurs with greater rapidity. 4. If the dose be raised to 7.5 milligrammes, the action of chloral is entirely obliterated, and the animal dies by strychnia poisoning. 5. If we try to combat the effects of chloral given in a fatal dose by the subcutaneous injection of strychnia, the animal always dies—most frequently from the action of the first substance, though sometimes from the second. Hence he concludes that strychnia is not an antidote to chloral.—*Lancet.*

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

Hypodermic Injection of Sulphate of Morphia in Autumnal Catarrh. By Wm. Moss, M.D., of Chestnut Hill, Philada.

I first tried this remedy in my own case, three years ago, having previously had slight relief from the internal use of morphia, and hoping only for a few hours' respite from the miseries of a violent attack of autumnal catarrh. The relief was immediate, and, to my surprise, lasting. I have since used it in a number of cases of autumnal and June catarrh with almost invariable success. It is sometimes necessary to repeat the injection one or more times during the period of susceptibility.

While far from claiming that this treatment is a specific, I am confident that it will bring a speedy relief to many who are unable to avail themselves of Dr. Wyman's pleasant remedy—a jaunt to the White Mountains.

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Phytolacca Decandra in the Treatment of Inflammation of the Mammary Glands. By G. W. Biggers, M.D., of La Grande, Oregon.

The following cases are stated as the *result of my experience* only with the remedy in question, and I trust that others may try it and report the result.

Case I.—Mrs. H., on third day after labour with her second child, mammæ commenced swelling, from an accumulation of milk. Did not see her until the symptoms were so urgent that there could be no mistake about the commencement of an abscess.

I pursued the antiphlogistic treatment, both general and local, until there was no promise of improvement; on the contrary, the case was continually getting worse. I then prescribed fluid ext. phytolacca decandra, gtts. xx, every three hours, in water. A very marked improvement took place in twelve hours, and in thirty-six hours the patient was well. There was also a suppression of the lochia, which was also re-established.

Case II.—Mrs. B., whose child died a few hours after its birth, was attacked, after the secretion of milk took place, with inflammation of the mammary glands, from over-distension, and had the milk withdrawn very regularly, yet the case continued worse, threatening an abscess. I prescribed fluid ext. phytolacca decandra, gtts. xx, every three hours. Marked improvement in ten hours, and a complete recovery within thirty-six hours. There was also a suppression of lochia in this case, which was re-established with the cessation of the mammary inflammation.

Case III.—Mrs. G., at the fourth month of pregnancy, was attacked with inflammation of both mammæ, severe pain, swelling, and very great heat, with severe rigours, amounting to a distinct chill. I prescribed fluid ext. phytolacca decandra, gtts. xv, every three hours, in water. The symptoms all subsided, and the patient fully recovered within forty-eight hours with no other treatment.

I have used the remedy above named in many other cases of mammary inflammation, and it has never yet failed in a single case.

The preparation used was Thayer's fluid extract, for the reason that

the plant does not grow in this State. A tincture from the green root would, I think, be more reliable.

Large Hepatic Abscess; Puncture; Death. By GEORGE N. MONETTE, M.D., Visiting Physician to the Charity Hospital, New Orleans, La.

Frank H., æt. 34, a coloured steamboat deck-hand, came under my observation about the 15th of March, with what was apparently ascites, with all the characteristic phenomena, save a want of uniformity of distension in the left hypochondriac region; his spleen was of a comparatively small size. He states that, about the middle of the preceding year, after having eaten a very sumptuous meal, he felt a keen lancinating pain in the right side, which he could not account for. He also suffered from a very severe fever on that night, associated with continued and persistent dysenteric symptoms, which continued for six weeks, when the accumulation attained its acme. He had pain over the region of the liver, also in the shoulder; hectic, dysenteric symptoms; tongue slightly furred; the conjunctiva was of a very sallow hue; the superior, as also the inferior extremities, were very much emaciated and inclined to œdema, more especially after standing. I apprehended some heart-complication; none existed; so I attributed it to obstructed portal circulation, caused by the enormous enlargement of the liver, encroaching upon and resulting in compression of the viscera and the larger vessels.

The enlarged organ within the abdominal parietes measured in its largest circumference (across the umbilicus) three feet three inches; the smallest circumference (across the pubis) was two feet six inches. The man was of small stature, being only about five feet five inches.

There was great tenderness upon pressure, and, when percussed, he experienced very acute pain. He preferably rested upon his right side, or partially upon his back, owing to the great pain induced by the organ being suspended from its attachment when lying upon his left side.

For some considerable length of time I observed a partial disposition for its determination about the right hypochondriac region, on a line parallel with the umbilicus. This was evidently caused by continued pressure, which induced a comparative atrophy of the muscular structure of the abdominal parietes.

Prior to the administration of any remedy the inferior border of the enlarged liver extended downwards as far as the crest of the ilium, and about an inch and a half below the umbilicus and the smaller lobe, extending over and below the cartilages of the ninth, tenth, and eleventh ribs on the left side.

For treatment, I usually gave quiniæ sulph. in 3 grain doses every four hours, combined with 5 drops tinct. opii, until he had taken 15 grains of the quinia and tr. opii proportionately. I then gave as a *placebo*, as follows: ℞. Potassii iodidi ℥ij; syrupi sarsaparill. comp., tinct. cinchonæ comp., āā ℥iij. Misce. Signa. A tablespoonful three times daily, which acted very satisfactorily, and he said it benefited him very materially.

The prognosis being unfavourable, I concluded to explore the abscess, and invited two of my former professors (Profs. Bemiss and Richardson) to be present and witness the verification of my diagnosis.

On the 21st day of May I inserted a trocar at the suspected point of determination, and withdrew about a *quart* of *horribly* fetid pus. The patient experienced great relief, and consoled himself that he might recover; but he only survived the operation eight days. Being indisposed on the day of his death, I did not secure a post-mortem examination.

DOMESTIC SUMMARY.

Extirpation of the Kidney.—A case of this rare operation is recorded (*New York Med. Journ.*, Nov. 1872) by Dr. Geo. A. Peters. The subject of it was a gentleman æt. 36, admitted into St. Luke's Hospital, New York, April 1, 1872, under Dr. Peters's care. His health had been excellent until Oct. 1870, when after a thirty-mile horseback ride in the rain, he was seized with frequent and urgent desire to micturate, and he passed large quantities of clear straw-coloured urine.

After two weeks the urine became high-coloured, and deposited a brickdust sediment, and he experienced pain before and after micturition, extending from the neck of the bladder to the meatus. At this time he first suffered with lancinating pain in region of right kidney, which increased on movement and extended downward into the pelvis, and from a sense of weight in the right side. In the spring of 1871 his general health improved, the urine became clearer, and he had less pain on micturition.

In July, 1871, after another long horseback ride, he experienced a painful swelling of testicle, and the swelling extended up the spermatic cord. The pain and swelling lasted without relief for six weeks, and finally subsided.

As the winter of 1871–2 approached he began to suffer as before. He was treated for vesical calculus, cystitis, and stricture, by various physicians, but without relief. One day, in Dec. 1871, just after a catheter had been introduced, he felt a sharp pain in the region of the bladder, "as though something had given way," and immediately passed a wineglassful of clear pus, unmixed with urine. From that time on, at the close of each act of micturition, he passed about a drachm of pus, clear and yellow, unmixed with urine or blood.

This condition of things continued at the time he came under Dr. P.s' care. At this time the patient's general condition was good, he urinated every hour, with pain before and after passing urine (about a wineglassful each time) followed by a drachm of pus. Albumen in urine, but no casts. He complains of a constant sense of weight in right lumbar region, with pain, which is at times severe and paroxysmal, shooting down into the pelvis; also pain at the end of penis. There is a tumour occupying the region of the right kidney, supposed to be the kidney itself. What appears to be the pelvis of the kidney is the seat of the principal enlargement, and at this point deep fluctuation is distinctly made out. By rectal examination the vas deferens of the same side is found enlarged and indurated.

On the 7th of May, the patient being etherized, Dr. P. punctured the tumour with Dieulafoy's aspirator (No. 2) "at a point midway between the last rib and the crest of the ilium, and three inches from the vertebral spines. About three ounces of clear pus flowed rapidly into the exhausted receiver, when the current suddenly ceased; and, on withdrawing the canula, after in vain sounding with it for any thing having the feel of a calculus, its eyes were found plugged with small masses of granular matter, which were decided to be fragments of calculus. The puncture healed without causing the least trouble.

"From the symptoms, pain, purulent discharge, and previous traces of blood in the urine after exercise; from the condition of the kidney as appreciated by palpation and the additional evidences of stone which the exploration was thought to furnish; after due consultation, the diagnosis of calculus pyelitis was decided on, and the operation of nephrotomy, with possible extirpation of the kidney, depending on the amount of degeneration, was considered advisable."

On the 16th May, while the patient was under the influence of ether, Dr. P. made an incision six and three-quarter inches in length "extending from the lower border of the twelfth rib to the crest of the ilium, parallel to and three inches from the vertebral spines. The outer border of the quadratus-lumborum muscle was thus reached, and, by cutting through the sub-lying fat, the capsule of the kidney was easily brought into view. A long and tedious search was then made in order to bring the pelvis of the organ in sight, so that it might be opened into, and the stone, if any existed, removed.

"This, however, was found impossible, owing to the fact that the pelvis was not at all distended, and also to the depth from the surface at which it lay, and the number of adhesions binding it down on all sides. Several fluctuating points were discovered on the surface of the kidney, into one of which a small exploring trocar was introduced, and an inconsiderable amount of pus (about ʒj) was withdrawn, but no stone was felt. A silver probe was substituted for the trocar, but with no better success. The probe was withdrawn, and the smallest ordinary steel urethral sound introduced. This was felt to drop into a cavity two and a half inches, but still revealed no stone. The puncture was then enlarged by a transverse incision with a blunt-pointed bistoury, sufficient to admit the finger, and the whole cavity thoroughly explored, but without success. Considering the evident uselessness of the kidney for any physiological purpose, and the damage it had already suffered in the search, it was thought best to remove it entirely. The adhesions around the kidney on the upper and lower sides were torn away with difficulty. One vein was tied separately, the other vessels and the ureter were so firmly agglutinated as to make their separation impossible. They were all secured by one strong silk ligature, and the mass cut through between it and the kidney. The cut surface was very hard and dense, looking almost cartilaginous. A few muscular arterial branches required the ligature in the early steps of the operation. Five ligatures were left in the wound, the edges of which were brought together with six deep sutures. The operation lasted nearly two and a half hours. Wound dressed with sheet-lint, compress and body bandage. Patient, evidently much depressed by the anæsthetic, was immediately put to bed and ordered hot-air bath. Brandy was also administered both by mouth and rectum," and also morphia hypodermically.

The patient died sixty-five hours after the operation.

From the report of the autopsy made by Dr. F. Delafield we learn that in the right kidney, ureter, seminal vesicle, and epididymis, a chronic inflammation leading to the formation of fibrous tissue and lymphoid cells, with a tendency to cheesy degeneration, had been going on.

The above is the eighth case, so far as we have been able to ascertain, in which the operation of extirpation of the kidney has been performed on the human subject. Dr. Peters states, in the paper above quoted, that, "after diligent search I have been able to find but three other recorded cases." These are Simon's, Von Bruns' (erroneously ascribed by Dr. Peters to Linser), and Durham's. Four others (Peaslee's, Schetelig's, Gilmore's and Meadows') should be added to his list.

To complete the history of the operation we have collated the notes of these seven cases:—

CASE 1.—Dr. E. R. PEASLEE (*On Ovarian Tumours*, p. 158), in April, 1868, cut down upon a supposed ovarian tumour, but which proved to be a solid renal tumour; it was removed, and the patient died of peritonitis fifty hours after the operation.

CASE 2.—Operated upon by Dr. SIMON, of Heidelberg (*Deutsche Klinik*, April 9, 1870, and *Edin. Med. Journ.*, May, 1870). The patient, aged 46, had, a year and a half previously, undergone ovariotomy, combined with hysterotomy and division of the left ureter. An abdominal uretral fistula remained, for the cure of which, after several ineffectual attempts to close, Prof. Simon extirpated the kidney in August, 1869. The patient left her bed in six weeks. The ligatures attached to the pedicle did not come away for six months; after which the wound rapidly cicatrized and she entirely recovered.

CASE 3.—Dr. SCHETELIG (*Archiv für Gynäkol.*, 1870) reports a case in which he cut down upon what he supposed to be an ovarian cyst, but which proved to be an enormous hydronephrosis; adhesions were found extending into the pelvis; extirpation was performed by gastrotomy; death ensued on the second day. On dissection, no trace of left kidney could be found. (*New Sydenham Soc. Biennial Retrospect*, 1869–70, and *Peaslee on Ovarian Tumours*, p. 157.)

CASE 4.—Operated upon by Prof. VON BRUNS, and reported by Linser (*Württ. Med. Corresp.*, Bl., 1871, xli. No. 14, and *Am. Journ. of Med. Sci.*, Jan. 1872). The patient, a male received a gunshot wound, Dec. 2, 1870. The ball entered

on the left side, and passed out an inch to the right of the spinal process of second lumbar vertebra. Urine was discharged through the fistula, which was believed to connect with the left kidney. Prof. Von Bruns extirpated the kidney March 23. Death occurred ten hours after the operation.

Case 5.—Dr. John T. Gilmore, of Mobile, Alabama (*Am. Journ. of Obstetrics*, May, 1871), in December, 1870, extirpated the left kidney of a negro woman, aged 33 years. Following her first pregnancy, four years prior to the operation, an indistinct tumour appeared in the upper part of the left lumbar region, which gave constant pain, and within the last four or five months the pain had become so severe that she sought relief at all hazards, and Dr. G. determined to remove the offending substance, even if it should prove to be the kidney. Upon making his incision he found an atrophied kidney, and extirpated it. It was fed by a single small vessel, which was ligated. At the time of the operation the patient was five months advanced in pregnancy. She recovered without aborting.

Case 6.—Dr. Meadows, of London (*Brit. Med. Journ.*, July 8 and 15, and *Med. News*, Sept. 1871), operated for the relief of a patient suffering from what was supposed to be ovarian dropsy; but, on opening the abdomen, the tumour was found to be a large cyst of the kidney. A ligature was applied, as in the operation for the removal of an ovarian tumour, and the diseased kidney extirpated. The case proved fatal from hemorrhage of the pedicle on the sixth day.

Case 7.—Operated upon by Mr. Durham, of London (*Brit. Med. Journ.*, May 18 and 25, 1872, and *New York Med. Journ.*, Nov. 1872, May 14, 1872). The patient was a female, aged 43 years. Two years previously Mr. Durham cut down upon the kidney, but no calculus was found, and, the kidney being healthy, the wound was closed. The patient recovered, but was not relieved from the severe pain, hæmaturia, and other symptoms from which she had suffered. The kidney was subsequently extirpated, and was found healthy. The patient died within a week.

Of the eight cases recorded above, two recovered and six died.

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Stone in the Kidney; Nephrotomy.—Dr. W. W. Dawson communicated to the Cincinnati Academy of Medicine, Oct. 26, 1872, an interesting case of this. The subject of it was a woman, about fifty years of age, a patient of Drs. Graham and Bartholow, who eight years ago was suddenly attacked by a violent hæmaturia. From this she recovered and retained good health until five years since, when she was again seized with an attack of the same nature. From that period she was subject to these attacks at varying intervals, but yet enjoyed comparatively good health. Two or three years ago she began to experience a sense of pain in the left lumbar region, and soon a tumour, which rapidly increased in its dimensions, appeared in the left hypochondrium. The tumour was very sensitive to the touch, and pressure produced pain. The patient passed immense quantities of pus with her urine, and her general condition soon commenced to deteriorate under the exhaustive drain.

The patient was first seen by Dr. D. Oct. 19, when he found a large tumour in the left lumbar region extending from the ribs to the crest of the ilium, and crowding over also towards, but not reaching, the median line. The case was considered one of pyelitis, and the existence of a renal calculus had been diagnosticated by the physicians in attendance. Five days prior to the operation one pint of pus was removed from the tumour by the use of the aspirator. The canula was then allowed to remain, and the tumour exhausted at two different times prior to the operation for the removal of the calculus.

On Oct. 24, the patient being under chloroform, an incision was made posteriorly on a line from the eleventh rib to the crest of the ilium, along the border of the erectores spinæ; after dissecting through two inches of healthy tissue the operator came upon a glistening membrane which proved to be the transversalis fascia. Making an incision through this, the peri-renal fat was exposed; it was present in quantity and a considerable portion of it was excised. This immediately brought the kidney with its characteristic color into view. Then by placing the finger in the wound and palpating the abdomen anteriorly

Dr. Graham obtained indistinct fluctuation. The kidney was punctured with a trocar, and a quantity of pus removed. The opening was then enlarged by the knife, more purulent material thus liberated; and the finger was then introduced into the tumour, which was nothing less than a sac of the degenerated kidney. After scooping out all purulent accumulation, the finger came in contact with the calculus, which was successfully extracted. A drainage tube was thereupon inserted and the wound was closed.

The patient continued in good condition for about four days. Pus continued to drain off, in small quantities, through the wound; the urine voided was perfectly clear. Pyæmia then set in, and the patient died five days after the operation. No post-mortem was allowed.

Dr. Whittaker, who made an examination of the stone from the small particles he was allowed to detach, states: "This stone is extremely light; it weighs but 20¾ grs. It is ¾ of an inch in length in its longest diameter, and ½ an inch in breadth. It is somewhat reniform in shape, presenting an irregular central constriction. Its surface is everywhere calcareous and quite rough, presenting elevations and depressions corresponding to the calices and pyramidal apices. It varies in colour on its external surface from black through shades of purple, red, and deep and light gray to nearly white. The substance of the stone is of chalky whiteness. It is clearly a phosphatic stone, an accumulation of the ammonio-magnesian phosphates of lime covered with urohæmatin and mucus. This nature of its constitution is evident upon both chemical and microscopic tests. There is a small cavity in its interior eccentric in position. This cavity in all probability represents the former nucleus about which the phosphatic salts were deposited, possibly a fragment of mucus or blood which had subsequently disappeared by desiccation or absorption.—*The Clinic*, Nov. 2 and 16, 1872.

This operation, which was discussed by Hippocrates, and is said to have been performed in the latter part of the seventeenth century by an Italian surgeon, named Marchetti, has been recently advocated by Mr. T. Smith (see *Med.-Chir. Trans.*, vol. lii., also this Journal for July, 1869, p. 259, and April, 1870, p. 471).

The diagnosis of the existence of a renal calculus is not always devoid of difficulty, and it will be remembered that Mr. Durham (*Med. News*, 1870, p. 61) on one occasion performed nephrotomy, but no calculus was present.

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Fibro-Cystic Bronchocele.—In the original department of this number will be found an account of an enormous bronchocele, removed by Mr. T. Holmes. Four other cases of bronchocele, but of much less dimensions, have recently been reported, one in the *Canada Medical and Surgical Journal* (November, 1872), by Dr. GEORGE E. FENWICK, Professor of Clinical Surgery in McGill's College, two in the *Photographic Review* (December, 1871), by Dr. MAURY, of Philadelphia, and one by Dr. HODDER, of Toronto, in *Canada Lancet*, Dec. 1872.

The subject of Dr. Fenwick's case was a woman aged 21, in whom the tumour appeared when she was three years of age, and continued to grow until the last four years. When admitted into Montreal General Hospital, and seen by Dr. F., it consisted of three lobes, a huge central mass and two lateral, measuring 17½ inches in circumference. There was considerable pulsation of the arteries, and the veins were large and tortuous. The central mass was tapped with a small trocar and about two ounces of bloody serum was removed; after which the cyst was injected with tincture of iodine. The same operation was performed at two other points. The difficulty of respiration subsequently increased, and it was decided with the consent of the patient to remove the tumour. Dr. F. operated on the 8th of June, according to the plan recommended by Prof. Greene in the number of this Journal for January, 1871. The incision was made in the median line, extending the whole length of the tumour to the upper part of the sternum, getting down at once to the tumour, and dividing what Greene terms its "fascia propria." There was no difficulty then in enucleating the mass; it was rapidly turned out with the finger, the dissection being carried outwards. In getting to the posterior edge the veins appeared large in size, being spread out and at the same time incorporated in

the mass of the tumour. It was at this point that the difficulty arose, in continuing the dissection with the finger backwards, the veins seemed to tear like paper, and the effusion of blood was sudden and enormous in quantity. This, however, was controlled after some difficulty, and ligatures applied. The superior and inferior thyroid arteries which appeared small were ligated; the mass was found to extend in the interspace between the trachea and œsophagus, and the latter was exposed for about three inches of its extent. Coming to the pedicle, which appeared adherent to the side of the trachea, and which was about the size of two fingers, it was decided to cast a ligature around it and remove with the knife the tumour. This being done no further hemorrhage occurred. The edges of the wound were brought together by eight interrupted sutures, and the patient removed to bed. The tumour was nodulated, composed of three distinct masses, the central one of which, when cut into, consisted of a cyst which held about six ounces of fluid. Before opening the cyst the tumour was found to weigh 2 lbs. 14 oz., and consisted almost entirely of hypertrophied gland structure intermixed with fibroid tissue. An hour after the operation, the report states, the pulse was 90, regular, but weak.' The girl complained of great thirst; brandy and water with beef essence had been ordered, but were rejected, there being considerable irritability of the stomach. Iced champagne was substituted for the brandy.

The patient rallied well, and was discharged with the wound closed on the 29th of July.

Dr. F, says that if called on to operate on a similar case he would separate the mass first from its central attachment, dissecting beneath the tumour from the median line, by which means the operator would arrive at the origin of its vascular supply and thus avoid much of the effusion of blood which, to a certain extent, is unavoidable.

The subject of Dr. Maury's case was a woman aged 23, in whom the tumour first appeared when she was nine years of age, since which it had gradually increased. Two attempts were made to "produce an impression on the morbid mass by electrical cauterization," but without effect, and it was then decided to resort to the knife. "The patient being fully influenced by chloroform, an incision, five inches in length, was made over the most prominent part of the growth, parallel with its perpendicular diameter, and this joined by a horizontal one of sufficient extent to allow free manipulation during the operation. The firm, dense capsule of the gland was soon reached by division of the bands of fascia overlying. It was soon seen that the thyroid arteries were greatly enlarged, more especially the right and left inferior. All these were well secured in turn, as likewise all smaller vessels. In this way *absolutely* all hemorrhage was avoided. The cyst was then peeled away from the trachea for the extent of three and a half inches. The sheath of the right carotid was undisturbed, but fully exposed, as also that of the left. The wound was closed, no hemorrhage followed, and the patient did well, excepting a slight attack of erysipelas, which came on three days after, and, queerly enough, involved the face and portions of the neck to the entire exclusion of the wound."

Dr. M. states that he "removed, some weeks after, another very large growth of the same kind in the same manner, and with the best result, as respects hemorrhage and shock. The patient did well for twenty-one days, and was then seized with pneumonia and perished after all the ligatures had become detached and the wound almost healed."

The Canada Lancet for December, 1872, contains a report of a case of fibro-cystic disease of the right half of the thyroid gland removed, by Dr. Edward M. Hodder, Consulting Surgeon to the Toronto General Hospital. In this as in the two previous cases, we have to regret the briefness of the account, and as regards this last the report appears to have been rather prematurely published, as at the latest date, though the patient is said to have been cured, the ligatures had not separated.

The subject of this case was a girl aged 18, upon whom an operation had previously been attempted by a surgeon, who supposed the tumour to be a simple cyst, but on finding the attachments much firmer and deeper seated than he expected, and having divided the external jugular vein at an early stage of

the operation, wisely contented himself with cutting off the upper portion of the tumour, securing the vessels, and closing the wound.

She then applied to Dr. Hodder, who operated on the 31st of October, 1872, as follows:—

Chloroform being given, "I commenced the incision downwards and forwards in the course of the cicatrix, to obviate greater deformity, and then directly downwards, and by careful dissection I soon exposed the upper and more projecting part of the diseased mass. I continued my dissection to the lower angle of the wound, and was ably assisted by Dr. Temple, who retracted the more important vessels and nerves, so as to enable me to get to the pedicle or root of the gland. Although the body of the gland did not partake of the fibro-cystic condition of the upper and more projecting portion, yet it was very considerably enlarged, projecting backwards and inwards, pressing strongly upon the œsophagus, larynx, and upper part of the trachea, and was very firmly attached to the lower and posterior border of the thyroid cartilage, and to the crico-thyroid membrane. During the latter part of the operation I was materially assisted by Dr. Temple seizing the body of the gland with a pair of toothed forceps, and drawing it outwards, which enabled me to get at the root or firmest attachments.

"Its removal required careful and minute dissection, and was effected in great measure by the finger and handle of the knife, with occasional touches of the blade.

"There was a good deal of hemorrhage during the operation, principally venous, but, the external jugular having been divided in the first operation, I was saved from the risk of dividing that vessel. Two arteries, the superior and inferior thyroid, alone required ligatures, and a few twigs were twisted.

"After the removal of the gland, the carotid, pneumogastric, œsophagus, the thyroid and cricoid cartilages were distinctly seen; the wound was left open until all oozing had ceased, and was then closed by several points of suture; a piece of dry lint, with a few strips of plaster and a bandage, completed the dressing.

"After the removal of the tumour it was found to be the right lobe of the thyroid gland entire, the upper half being about the size of an egg, and fibro-cystic in character, which formed the projecting portion, the cysts containing a grayish substance somewhat like sago in appearance and consistence, the upper and larger cyst having been torn by the forceps during its removal; the lower half, and that portion which pressed upon the œsophagus and trachea, was about four inches long, and appeared healthy although very much hypertrophied."

The latest report is Nov. 20, only twenty days after the operation, when it is stated, "Ligatures still firm, in every other respect quite well."

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On Ovariotomy.—Dr. J. MARION SIMS contributes (*New York Med. Journ.*, Dec. 1872) an interesting paper on this subject. He thinks the clamp has seen its best days, and, when the question of the management of the pedicle is positively determined, he has scarcely a doubt that it will be against the principle of drawing the pedicle externally.

"For twenty years," Dr. Sims says, "I have advocated the plan of tying the pedicle with silver wire, which I felt sure would become sacculated, and therefore produce no harm; and for the last ten years this plan has been followed by Dr. Emmet and myself. . . . . So far, Dr. Emmet and myself have every reason to be satisfied with our method of dealing with the pedicle. But I have no prejudices whatever on the subject, and I think the time may possibly come when clamps and ligatures, whether of twine, catgut, or wire, may give way to torsion of the arteries, or to their obliteration by the enucleation of the pedicle from the coats of the cyst."

Dr. Sims thinks that if we desire to reduce the mortality of ovariotomy we should leave the pedicle and turn our attention to another quarter. From a study of his own *post-mortems* and those of Mr. Spencer Wells,[1] he arrives at the conclusion that "septicæmia is the great outlet of life in ovariotomy."

[1] Diseases of the Ovaries. By T. Spencer Wells.

In Mr. Spencer Wells's twenty-eight fatal cases in which *post-mortem* examinations were made, two died of tetanus, and, of the remaining twenty-six, "two had pyæmic poisoning, and twenty-four presented the infallible *post-obit* evidences of septicæmia. . . . . In every one of my seven *post-mortem* examinations, and in every one of Mr. Spencer Wells's twenty-six, we find uniformly the same pathological appearances. In all of them we find a quantity of reddish serum, or grayish turbid serum, or fetid serum, or putrid serum, or acrimonious serum, in the peritoneal cavity; and in cases slowly dying of pyæmia we invariably find pyogenic reservoirs in the pelvic cavity. Is it not logical to infer that these pent-up fluids are the causes of the blood-poisoning that so uniformly, I should say universally, attends fatal cases of ovariotomy?

"I do not pretend to deny that death may occur from shock, or from hemorrhage, or from heart-clot, or from exhaustion, or even from peritonitis; but I feel sure that these, independently of blood-poisoning and its legitimate causes, are of comparatively rare occurrence. If, then, we have such an almost universal evil to deal with as septicæmia, and if that septicæmia is, in thirty-seven cases out of thirty-nine, clearly traceable to the poisonous fluids effused in the peritoneal cavity, is it not self-evident that the indication, both of prevention and cure, is to drain off these poisonous fluids in the speediest and most direct way possible?"

Dr. Peaslee recommended washing out the peritoneum with disinfectants, and began this practice in 1855. In his recent book[1] he defines the manner, conditions, and advantages of using intra-peritoneal injections.

"To him [Dr. Peaslee] we owe the principle of intra-peritoneal medication. I claim only to be his coadjutor. But the rule that he would establish for exceptional cases I wish to make applicable to all alike; and, instead of washing out the peritoneal cavity at the top, I propose to open it at the bottom, as he did in 1855, and let the fluids run out spontaneously and continuously. The natural outlet of the peritoneal cavity is through the Douglas *cul-de-sac*.

"If the drainage through this *cul-de-sac* be made promptly and thoroughly, there is every reason to believe that pyæmic collections, such as happened to Mr. Spencer Wells, could never take place; and that septicæmic poisoning would in a great measure be prevented.

"What I propose, then, is simply this: to puncture the *cul-de-sac* of the vagina behind the cervix uteri, and to pass a tube of some sort into the peritoneal cavity to drain off any effusion that may take place in said cavity. I propose to do it in every instance, whether there are adhesions or not. Patients may and do die of septicæmia after ovariotomy, where there are no adhesions. Hence it is safe to make this puncture in every case, whether simple or complicated. If in three or four days we see that there is no necessity for this precautionary step in the operation, we have nothing to do but to remove the tube, and in twenty-four hours the little puncture closes up spontaneously. Where is the harm, then, of making the puncture? It adds nothing, not the prick of a pin, to the danger of ovariotomy. It cannot, possibly, do the least harm, and it may be the means of saving life. It may be said that it is time enough to make the puncture when bad symptoms arise. But we know that many cases go on very well for two or three days, when, all at once, there is an explosion as it were; the pulse suddenly jumps from 100 to 120, and then to 140, with vomiting, tympanites, hot skin, and oppressed breathing; the pulse gets quicker and more feeble, and the patient sinks exhausted in sixty or seventy hours after operation. We are in doubt what else to do but to give stimulants; and it is too late to be operating in the dark on a dying patient's vaginal *cul-de-sac*. During the ovariotomy it would have been nothing to puncture it, but now it becomes a difficult thing to do, and we naturally shrink from tormenting one in such extreme agony and prostration, unless we should feel sure of finding the cause of the evil, and of warding off the dangers of the moment. But in my own mind I am sure of what generates these alarming and too often dangerous symptoms, and I beg to urge upon my brethren, with all the earnestness of a deep-settled conviction, the propriety, the necessity, the

[1] Ovarian Tumors. By E. Randolph Peaslee.

safety, and the efficiency, of resorting to this drainage by the vagina in every case of ovariotomy, both as a preventive and curative agent against septicæmia, which, I am sure, is the great danger in this formidable operation."

Since May, 1872, Dr. Sims has performed four ovariotomies with the drainage plan.

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Absorption of the Humerus after Fracture.—From the *Boston Medical and Surgical Journal* (Oct. 10, 1872) we glean the following notes of a case which is stated on excellent authority to be "without parallel in the records of surgery:"—

In 1819, Mr. C. B., at the age of 18, fractured his right humerus near the middle. Subsequently, and before he had recovered entirely, he broke his arm at the same point, a second time, while holding a plough in the field. A short time afterward he slipped on the floor and fractured the bone a third time. The last accident was not more than two months from the occurrence of the first. After this final fracture, there was never any tendency to a union of the broken bone, but the humerus began slowly and painlessly to disappear, small fragments of it breaking off, without accompanying inflammation of the soft parts, or any fistulous or suppurating sore, or orifice. The skin of the arm was never broken, and no piece of bone or part of the humerus was ever taken away, or came out unassisted. For four years, Mr. B. did no work, but the process of absorption covered a period of twelve years, at the end of which time the limb had attained a condition in which it permanently remained until the day of his death, at the age of 70 years. This occurred at the Boston Lunatic Hospital, on February 11th, 1871, and was caused by double pneumonia. He had been an inmate of this Institution, at intervals, for four years and three months, but, except in mental condition, was, as he had always been, in excellent general health, with no local affection of his osseous system, except in the arm already alluded to, and capable of a very considerable amount of manual labour, which he willingly and readily performed.

Dr. C. B. Porter, Demonstrator of Anatomy in the Medical Department of Harvard University, gives the following description of the specimen:—

"All traces of the humerus are obliterated, except its two extremities. The remains of the lower extremity consist of a small, somewhat irregular, pyramidal piece of bone and cartilage, an inch and a half long, three-quarters of an inch wide at its base, its apex pointing upward and somewhat outward. This articulates in a very imperfect way with the radius and ulna, both of whose upper extremities are modified by absorption, and their shafts fused together for their upper third into one slender bone, tapering off in a small and imperfect olecranon. This anchylosis at the upper part of the forearm reduces the rotation of the radius on the ulna at the wrist to a very slight motion. The remains of the upper extremity of the humerus consist of a thin, auricular-shaped plate of bone, two inches long and one inch wide, in close relation with the glenoid cavity, but presenting no real articular surface. On the outer and upper edge of this piece are inserted the tendons of the supra- and infra-spinatus and teres minor, defining this as the greater tuberosity. Just below this is another bony fragment, an inch long, half an inch wide, slightly concave, into the anterior border of which is inserted the tendon of the pectoralis major. Into the inner and upper border is inserted the tendon of the teres major. The latissimus dorsi, which normally should be inserted with that of the teres major, is inserted, however, into the lower border of the teres major, midway between its origin and insertion. A strong, fibrous band connects it with this last-mentioned fragment of bone. A third piece, a small nodule, four lines long by two lines wide, is attached to this plate on its upper and internal aspect by a tendinous band; the tendon of the subscapularis muscle is inserted into this nodule, characterizing it thereby as the lesser tuberosity of the humerus. The articular surface of the glenoid cavity is obliterated; the bone itself only slightly if at all modified. The intervening space between the upper and lower fragments of the humerus is occupied by a fibro-muscular mass, and about half the normal length of the humerus, judging from the size of the scapula and the length of the forearm. This is made up, principally, of the brachialis anticus and the triceps,

united closely to each other. The biceps, lying anterior to this, arises and is inserted normally. The deltoid and coraco-brachialis arise normally, and are inserted, the former into the outer, the latter into the anterior surface of the mass described. The scapular head of the triceps arises normally; the other two heads are blended in this central mass, which gives origin, also, to the brachialis anticus in front. These two muscles, as they approach the elbow-joint, surround the remains of the lower end of the humerus and pass onward to become blended with the origins of the extensor and flexor muscles of the forearm, with no definite point of insertion. The supinator longus and the flexor carpi radialis longior take origin from the fibro-muscular mass. The humeral origin of the remaining muscles of the forearm is blended with the insertion of the muscles of the arm. All the bony prominences at the elbow-joint are so modified and absorbed as to bear no resemblance to the properly-developed bones. The muscles thus described, although somewhat fatty and atrophied, still present a very fair amount of development, and are well defined and readily distinguished and separated from each other.

"The arteries, veins, and nerves are not preserved in connection with the muscles, but at the time of the dissection a careful examination revealed no traces of a departure in them from an apparently natural and healthy condition."

The serviceableness of this limb has been alluded to. Mr. W. E. Mosely, Resident House Pupil at the Lunatic Hospital, states that Mr. B. could hoe, rake, shovel, sweep, cut wood, carry a large pail of water, hold a knife at the grindstone, and write a good hand. (He used to write letters for other patients.) He took care of his own room and made his own bed. By twisting the upper part of his arm, he could use his fingers well enough to tie his neck handkerchief. He could not flex the forearm upon the upper arm at will, nor could he extend the forearm when flexed, unless in a position in which the weight of the arm would make it drop. The muscular power of the arm was very considerable.

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Hydrocele of the Seminal Vesicle.—Prof. N. R. Smith, of Baltimore, records (*Lancet*, Oct. 19) the following interesting case of this:—

Prof. S. was called in consultation to a gentleman represented to have retention of urine. "I found," Prof. S. states, "a large pyriform tumour occupying the cavity of the pelvis, and also that of the abdomen, higher than the umbilicus. There was no gaseous resonance over any part of it, but when percussed it sounded and vibrated like a fluid in a tensely distended sac. The patient was passing, every hour, half an ounce of urine perfectly normal in character. The attending physician assured me that he had repeatedly introduced the catheter into the bladder and had not drawn more than an ounce of urine; not in the least reducing the volume of the tumour. Still I had not the slightest doubt that I was dealing with a distended bladder. . . .

"I was greatly surprised, then, when on introducing a long catheter fairly into the bladder there flowed only an ounce of perfectly normal urine. On placing my hand on the tumour, I found it not in the least reduced in size, and, as I moved the catheter, I distinctly felt the instrument gliding about in close contact with the walls of the belly, being pressed forward by the pyriform tumour.

"Here, for a moment, we were completely at fault—the tumour was not the distended bladder, but was manifestly a cyst, containing a fluid. It was posterior to the bladder, and displaced that organ forward. After another careful exploration externally, I introduced my finger into the rectum, and found the prostate normal; but, on carrying the finger deeply and to the left of it, I at once encountered an elastic tumour communicating the sensation of a sac tensely distended with fluid. On palpating with the other hand on the abdomen, the vibratory motion of a fluid was manifest.

"The matter was now clear. We had a hydrocele of the left seminal vesicle. We at once resolved on tapping through the rectum. This I effected with an ordinary straight trocar. On withdrawing the stylet, the fluid issued with force, and, in a few minutes, we drew off ten pints of a brown serous fluid, bearing no resemblance to urine.

"No unpleasant symptoms followed, but in some four weeks it again filled and was tapped by my colleague in the case. After this there was no recurrence. . . .

"The facts which I have related will, I trust, aid some professional brethren in diagnosing a case of such rare occurrence."

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Puncture of the Bladder above the Pubes.—Dr. JAMES I. LITTLE records (*New York Med. Journ.*, Nov., 1872) a case of retention of urine from enlarged prostate, in which he punctured the bladder fourteen times with a capillary aspirator. Subsequently a catheter could be introduced by the urethra. "No tenderness followed the punctures, and in a few days all traces of them had disappeared. The patient at last accounts was passing the greater portion of his urine without the catheter. No cystitis had taken place. During the time the aspirator was being used, he was free from all constitutional disturbance.

Dr. L. suggests the following rules for this operation:—

"1. The patient should lie on his back, and, if the bladder is not much distended, the operation will be facilitated by slightly elevating the patient's hips by means of a pillow placed beneath them.

"2. The punctures should be made on or near the median line, from one inch to one inch and a half above the pubes, and should be made each time in a different place. In the case described, the punctures were about a line apart and extended over an area about half an inch in diameter. Mr. Watelet recommends the No. 2 capillary trocar, but, in cases where cystitis exists and the urine is loaded with pus, mucus, or the phosphates, one of the larger trocars may be used with safety.

"3. The bladder may, when necessary, be washed out by filling the cylinder with water from the basin, and reversing the action of the instrument, without withdrawing the trocar from the bladder."

Another case of retention of urine from enlarged prostate is recorded (*Med. Record*, June 1, 1872) by Dr. H. K. Clark, of Geneva, in which six or seven punctures were made above the pubes with a trocar and canula *one-twelfth* of an inch in *diameter*. Each puncture was made without regard to the point of previous punctures, and the canula withdrawn as soon as the bladder was emptied. No unpleasant effect followed these operations.

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Methods of Operating for the Extraction of Cataract.—Dr. JOHN GREEN, by request of the St. Louis Medical Society, gave a short sketch of a few points in Ophthalmology which had come under his notice during his recent visit to London, in attendance upon the International Ophthalmological Congress.

With regard to the methods of operating for cataract, he said: "The commanding authority of Professor von Graefe, during the latter years of his life, forced, as it were, upon the whole profession his peculiar operative method for the extraction of senile cataract. With the exception of very few operators, conspicuous among whom may be mentioned Professors von Hasner, of Prague, and Williams, of Boston, the 'peripheric-linear' operation of von Graefe had come to be practised by all the world, and was regarded by many as the crowning perfection of this branch of ophthalmic surgery. The two years which have elapsed since von Graefe's death have sufficed to change the practice of nearly all Europe in this operation, and it may safely be said that the 'peripheric-linear' operation, performed strictly according to the rules so carefully laid down by its author, is already almost a thing of the past. Not but that great results have sprung from the grand enthusiasm and untiring zeal of the great master, in perfecting this his last gift to the profession, for to him, more than to any other surgeon living or dead, we owe the present emancipation of the ophthalmic art from the restraint of authority, and in nothing more than in the manner of operating for cataract.

"The practice of the leading ophthalmic surgeons of Europe to-day would seem to show that the precise form and position of the external incision, and the performance or non-performance of iridectomy as a part of the operative procedure, are matters which are rather to be left in each case to the enlight-

ened judgment of the surgeon, than to be settled beforehand according to any general rule."—*St. Louis Med. and Surg. Journ.*, Nov. 1872.

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Ligation of the third portion of the Subclavian Artery and Amputation at the Shoulder-joint.—The following case of this is related by Dr. ALFRED KINNEY, of Portland, Oregon:—

J. S., æt. 35, a healthy Irish laborer, was run over by a railroad car, at the East Portland depot, June 6th, at 11 A.M. A physician saw him immediately afterward, at the Railroad Hospital, and controlled the hemorrhage until my arrival, an hour later. I found the bones and muscular tissues of the left arm and forearm completely crushed; small fragments of the humerus having been driven in and around the shoulder-joint, lacerating the axillary artery as far up as its origin.

On account of the very extensive laceration of the axillary artery, we determined, during a hasty consultation, to ligate the subclavian before removing the arm, which I did in the third portion, assisted by Drs. Rafferty and Aug. C. Kinney; and afterwards severed the arm at the shoulder-joint.

Having removed the spiculæ of bone, and cut away all the badly lacerated and extravasated tissues from the shoulder, we trimmed the least contused portions of the integument into flaps, much like those of the Baron Larry operation. The wound was united by silk sutures, leaving an opening at the most dependent part for drainage, and dressed with oakum and a weak solution of carbolic acid. The patient, who was suffering from the severity of the shock, was given stimulants in large doses.

There were no other symptoms than those usually following such severe injuries, until the fifth day, when gangrene commenced in the wound: the shoulder in the course of a few hours becoming œdematous; the integument changed to a darker colour, and a thin, offensive discharge ran from the wound. Fever was very high and the pulse 140 per minute. Immediately the partially united wound was laid open by free incisions, and thoroughly washed out with a strong solution of carbolic acid. The gangrene ceased, and in a few days the mortified parts began to separate. The patient improved from this time. Enough integument was left, after the separation, to cover the bony prominence, excepting a chasm anteriorly, which filled up with granulations and cicatrized over within two months after the time of the accident.

The ligature came away from the subclavian on the 17th day. The patient is now entirely well.—*Pacific Med. and Surg. Journ.*, Nov. 1872.

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Amputation through the Metatarsus.—Dr. G. W. TOPPING records (*Michigan Univ. Med. Journ.*, July, 1872) a case in which this operation was performed.

F. J. P———, æt. 18, on the 4th of January, 1870, by a single blow from an axe, severed the first four toes in a slanting direction, partly through the heads of the metatarsal bones, and partly through the metatarso-phalangeal articulation. The detached portion hung only by a piece of skin an inch in width, and the bones protruded so as to render amputation higher up necessary.

An oval flap was dissected from the dorsum of the foot, the metatarsal bones sawn through their middle, and a large flap taken from the planter surface by cutting from within outward. Two arteries only required ligatures. The wound healed very quickly, leaving a good sound stump, upon which he walks with but a slight limp, and does all kinds of farm work, such as plowing, dragging, &c., as well as before the accident, without producing any irritation of the stump. There is no dragging of the stump and consequent liability to ulceration, as is so commonly the case after Chopart's operation.

I am not aware that any writer upon surgery has either recommended or described the above operation. The nearest approach to it is, what is known as Hey's, or, by some, Lisfranc's, operation through the metatarso-tarsal articulation, or, as it was sometimes performed, by sawing off the head of one or more of the metatarsal bones. This (Hey's) operation has seldom been performed, even in cases where it would have sufficed the purpose of amputation.

BOYLSTON MEDICAL PRIZE QUESTIONS.

The Boylston Medical Committee, appointed by the President and Fellows of Harvard University, announce that

The following are the questions proposed for 1873:—

1. Electro-Therapeutics.

2. The Value of Chemistry to the Medical Practitioner.

Dissertations on the above subjects must be transmitted, postpaid, to John Jeffries, M.D., Boston, *on or before the first Wednesday in April*, 1873.

The author of a dissertation considered worthy of a prize, on either of the subjects proposed for 1873, will be entitled to a premium of *one hundred and fifty dollars.*

The following are the questions proposed for 1874:—

1. The best Methods of Preventing the Development and Spread of Smallpox.

The author of a dissertation on this subject, considered worthy of a prize, will be entitled to a premium of *two hundred dollars.*

2. The Development and Extension of Malignant Disease.

The author of a dissertation on this subject, considered worthy of a prize, will be entitled to a premium of *one hundred and fifty dollars.*

Dissertations on these subjects must be transmitted as above, *on or before the first Wednesday in April*, 1874.

☞ For a more detailed announcement, see Boston Medical and Surgical Journal of June 13, 1872 (David Clapp & Son, Publishers, 384 Washington Street, Boston), or address

R. M. HODGES, M.D.,
Secretary of the Committee.

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